Precalculus **Review Packet (Chapters 5-10)** **Name:** Key

Chapter 5

Verify each identity.

1) $\cos\theta(\tan^2\theta + 1) = \sec\theta$

$\cos\theta \sec^2\theta$

$\left(\frac{\cancel{\cos}}{1}\right)\left(\frac{1}{\cancel{\cos^2}}\right)$

$\frac{1}{\cos}$ $\sec\theta$ ✓

2) $\frac{1}{\tan x \csc x} = \cos x$

$\frac{1}{\left(\frac{\sin}{\cos}\right)\left(\frac{1}{\sin}\right)}$

$\frac{1}{1/\cos}$ $\frac{1}{1}\cdot\frac{\cos}{1} = \cos$ ✓

3) $(\sin\theta + \cos\theta)^2 = 1 + \sin 2\theta$

$\sin^2 + 2\sin\cos + \cos^2$

$\sin^2 + \cos^2 + 2\sin\cos$

$1 + 2\sin\cos \Rightarrow 1 + \sin 2\theta$ ✓

double angle

4) $\frac{1}{\tan\beta \csc\beta \sin\beta} = \cot\beta$

$\frac{1}{\left(\frac{\sin}{\cos}\right)\left(\frac{1}{\sin}\right)\left(\frac{\sin}{1}\right)}$

$\frac{1}{\frac{\sin}{\cos}}$ $\frac{1}{1}\cdot\frac{\cos}{\sin} = \cot\beta$ ✓

Simplify Each:

5) $\left(\frac{\cot^2\theta}{\csc\theta+1}\right)\left(\frac{\csc-1}{\csc-1}\right)$

$\Rightarrow \frac{\cot^2(\csc-1)}{\csc^2-1}$

$\Rightarrow \frac{\cot^2(\csc-1)}{\cot^2}$ $\csc\theta - 1$

6) [redacted]

$\cos x + \sin x \tan x$

$\cos x + \left(\frac{\sin x}{1}\right)\left(\frac{\sin x}{\cos}\right)$

$\frac{\cos^2 x}{\cos x} + \frac{\sin^2 x}{\cos}$

$\frac{1}{\cos}x = \sec x$

7) $\frac{\sin x}{1-\cos x}\left(\frac{1+\cos x}{1+\cos x}\right)$

$\frac{\sin(1+\cos)}{1-\cos^2}$

$\frac{\cancel{\sin}(1+\cos)}{\cancel{\sin^2}}$

$\frac{1+\cos}{\sin} \Rightarrow \csc x + \cot x$

Solve each equation over the interval [0, 2π].

8) $2\cos^2 x - \cos x = 1$

$2x^2 - x - 1$

$2\cos^2 x - \cos x - 1 = 0$

$(2\cos x + 1)(\cos x - 1) = 0$

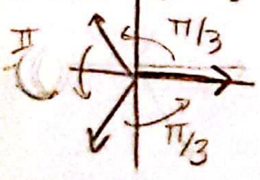
	x	-1
$2x$	$2x^2$	$-2x$
$+1$	x	-1

$0 = 2\cos x + 1$ $\cos x - 1 = 0$

$2\cos x = -1$ $\cos x = 1$

$\cos x = -1/2$ $x = \cos^{-1}(1)$

$x = \cos^{-1}(-1/2)$ $x = 0, 2\pi$



$x = \{0, 2\pi/3, 4\pi/3, 2\pi\}$

9) $\tan^2\theta + \tan\theta - 12 = 0$ $x^2 + x - 12$

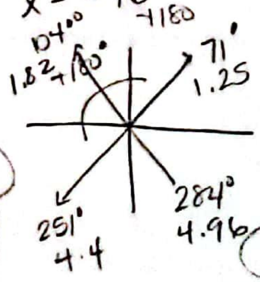
$(\tan x + 4)(\tan x - 3) = 0$

$\tan x = -4$ $\tan x = 3$

$x = \tan^{-1}(-4)$ $x = \tan^{-1}(3)$ period of tan = 180° or π

degrees:

$x = -76$ +180 $x = 71$



$\{71°, 104°, 251°, 284°\}$

or Radians

$\{1.25, 1.82, 4.4, 4.96\}$

sum & diff formulas

Write the expression as the sine, cosine or tangent of an angle.

10) $\sin 60° \cos 45° - \cos 60° \sin 45°$

$\sin(60-45)$

$\sin(15°) \approx .26$

11) $\frac{\tan 25° + \tan 10°}{1 - \tan 25° \tan 10°}$

$\tan(25+10)$

$\tan(35°) \simeq 0.7$

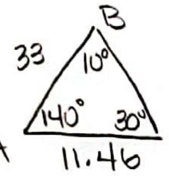
Chapter 6

$a^2 = b^2 + c^2 - 2bc\cos A$

Use the Law of Sines or the Law of Cosines to solve the triangle. If two solutions exist, find both.

1) $B = 10°, C = 30°, c = 33$

Law of sines



$\frac{\sin 30}{33} = \frac{\sin 10}{b}$

$b \sin 30 = 33 \sin 10$

$b = \frac{33 \sin 10}{\sin 30}$

$b = 11.46$

$\angle A = 140°$

$\frac{\sin 30}{33} = \frac{\sin 140}{a}$

$a = \frac{33 \sin 140}{\sin 30}$

$a = 42.42$

2) $a = 5, b = 8, c = 10$ cosines

* Find biggest ∠ 1st!

$10^2 = 8^2 + 5^2 - 2(8)(5)\cos C$

$100 = 89 - 80\cos C$

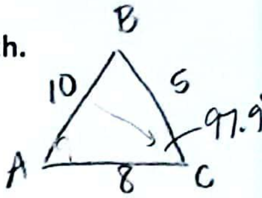
$11 = -80\cos$

$\cos C = 11/-80$

$C = \cos^{-1}(11/-80)$

$\angle C = 97.9°$

$\angle B = 52.4°$



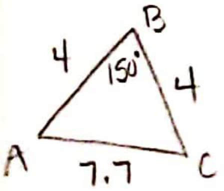
$\frac{\sin 97.9}{10} = \frac{\sin A}{5}$

$10 \sin A = 5 \sin 97.9$

$A = \sin^{-1}\left(\frac{5 \sin 97.9}{10}\right)$

$\angle A = 29.7°$

3) $B = 150°, a = 4, c = 4$



$b^2 = 4^2 + 4^2 - 2(4)(4)\cos 150$

$b^2 = 32 - 32\cos 150$

$\sqrt{b^2} = \sqrt{59.7}$ $b = 7.7$

$\frac{\sin A}{4} = \frac{\sin 150}{7.7}$ $7.7 \sin A = 4 \sin 150$

$A = \sin^{-1}\left(\frac{4 \sin 150}{7.7}\right)$ $\angle A = 15°$ $\angle B = 15°$

Find the component form, magnitude, and direction of the vector $\vec{v}$:

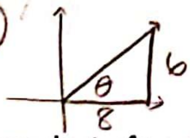
4) Initial point: $(-3,-5)$ Terminal Point: $(5,1)$

terminal − initial $\langle 5+3, 1+5 \rangle$

$\langle 8, 6 \rangle$

$\|\vec{v}\| = \sqrt{8^2 + 6^2} = \sqrt{64+36} = \sqrt{100}$

$\|\vec{v}\| = 10$

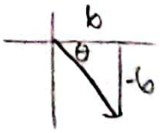


$\tan\theta = \frac{6}{8}$

$\theta = \tan^{-1}(3/4)$ $\theta = 36.9°$

5) $\vec{v} = 6i - 6j$ x y $\langle 6, -6 \rangle$

$\|\vec{v}\| = \sqrt{6^2 + (-6)^2} = \sqrt{72} \approx 8.5$



$\tan\theta = \frac{-6}{6}$

$\theta = \tan^{-1}(-1)$

$\theta =$ 45 360-45

315°

Find the dot product of vectors $\vec{u}$ *and* $\vec{v}$ and determine whether they are orthogonal.

6) $\vec{u} = \langle 6,7 \rangle$; $\vec{v} = \langle -3,9 \rangle$

$\vec{u} \cdot \vec{v} = 6(-3) + 7(9)$

$= -18 + 63$

$= 45$

not orthogonal dot product $\neq 0$

7) $\vec{u} = \langle 8,3 \rangle$; $\vec{v} = \langle -3,8 \rangle$

$u \cdot v = 8(-3) + (3)(8)$

$= -24 + 24$

$= 0$

yes, orthogonal b/c dot product = 0

the unit vector for each:

) in the direction of $\langle 2, 1\rangle$

$\|v\| = \sqrt{2^2+1^2} = \sqrt{5}$

$\frac{1}{\sqrt{5}}\langle 2,1\rangle = \left\langle \frac{2}{\sqrt{5}}, \frac{1}{\sqrt{5}} \right\rangle$

9) in the direction of $4i - 8j$ $\langle 4,-8\rangle$

$\|v\| = \sqrt{4^2+(-8)^2} = \sqrt{80} = 4\sqrt{5}$

$\frac{1}{4\sqrt{5}}\langle 4,-8\rangle = \left\langle \frac{4}{4\sqrt{5}}, \frac{-8}{4\sqrt{5}} \right\rangle$

$\left\langle \frac{1}{\sqrt{5}}, \frac{-2}{\sqrt{5}} \right\rangle$

Chapter 7

Solve the systems by substitution.

1) $\begin{cases} x+y=2 \\ x-y=0 \end{cases}$ $x=y$

$y+y=2$

$2y=2$

$y=1$

$x=1$ $(1,1)$

2) $\begin{cases} x^2+y^2=169 \\ 3x+2y=39 \end{cases}$

$\frac{3x}{3} = \frac{-2y}{3}+\frac{39}{3}$

$x = -\frac{2}{3}y+13$

$(-\frac{2}{3}y+13)(-\frac{2}{3}y+13)^2+y^2=169$

$9\left(\frac{4}{9}y^2 - \frac{26}{3}y - \frac{26}{3}y + 169 + y^2 = 169\right)$

$4y^2-78y-78y+1521+9y^2 = 1521$

$13y^2-156y=0$

$13y(y-12)=0$

$y=0,\ 12$

$x=13$

$x=5$

$\{(13,0),(5,12)\}$

Solve the system by elimination.

3) $\begin{cases} 40x+30y=24 \\ 20x-50y=-14 \end{cases}$ 2

$40x+30y=24$

$-(40x-100y=-28)$

$130y=52$

$y=2/5$

$40(x)+30(2/5)=24$

$40x+12=24$

$40x=12$

$x=3/10$

$\{3/10, 2/5\}$

4) $\begin{cases} 1.5x+2.5y=8.5 \\ 6x+10y=24 \end{cases}$ 4

$6x+10y=34$

$-(6x+10y=24)$

$0=10$ X

no solution

Write the form of the partial fraction decomposition of the rational expression. ~~Do not solve for the constants.~~

5) $\frac{3}{x^2+20x} = \frac{3}{x(x+20)}$

$\left(\frac{3}{x(x+20)}\right) = \left(\frac{A}{x} + \frac{B}{x+20}\right)$ $x(x+20)$

$3 = A(x+20)+B(x)$

Let $x=-20$: $3 = 0A + -20B$

$B = -3/20$

Let $x=0$: $3=20A+0$

$A=3/20$

$\frac{3/20}{x} + \frac{-3/20}{x+20}$ or $\frac{3}{20x} - \frac{3}{20(x+20)}$

6) $\frac{x-8}{x^2-3x-28}$ $\left(\frac{x-8}{(x-7)(x+4)} = \frac{A}{x-7} + \frac{B}{x+4}\right)$ $(x-7)(x+4)$

$x-8 = A(x+4)+B(x-7)$

Let $x=-4$: $-12 = \cancel{0A} - 11B$

$B = 12/11$

Let $x=7$: $-1 = 11A + \cancel{0B}$

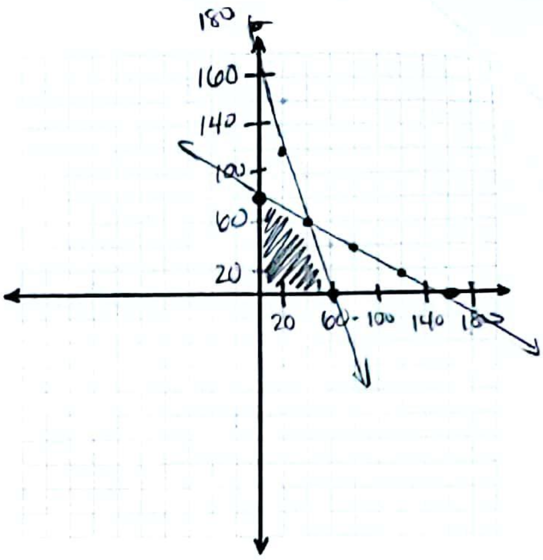
$A = -1/11$

$\frac{-1/11}{x-7} + \frac{12/11}{x+4}$ or $\frac{-1}{11(x-7)} + \frac{12}{11(x+4)}$

Sketch and label the solution to the system of inequalities.

7) $\begin{cases} x + 2y \le 160 \\ 3x + y \le 180 \\ x \ge 0 \\ y \ge 0 \end{cases}$

x	y
0	80
160	0



$y \le -3x + 180$

x	y
0	180
60	0

Vertices:
(0,80)
(40,60)
(60,0)
(0,0)

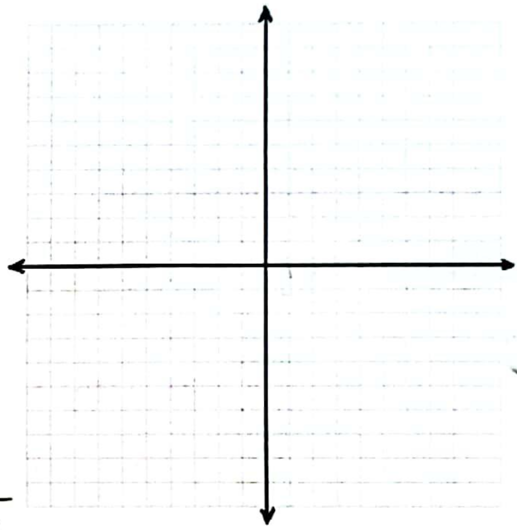
8) Find the maximum and minimum values of the objective function $z = 4x + y$ subject to the indicated contraints:

$\begin{cases} x \ge 0 \\ y \ge 0 \\ x + 2y \le 40 \\ 2x + 3y \ge 72 \end{cases}$

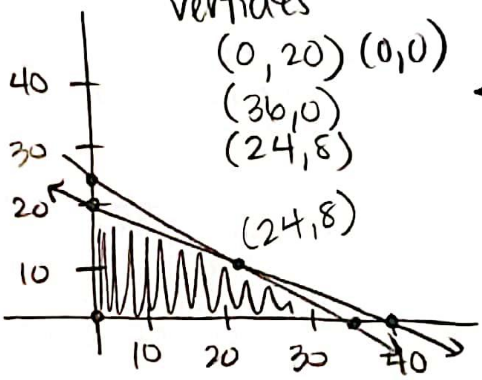
x	y
0	20
40	0

$y \le -\frac{1}{2}x + 20$

x	y
0	24
36	0



Vertices
(0,20) (0,0)
(36,0)
(24,8)



$z = 4x + y$
(0,20) = 20
(36,0) = 144
(24,8) = 104
(0,0) = 0

$\boxed{\begin{array}{l} \text{min of } 0 \\ @\ (0,0) \\ \text{max of } 144 \\ @\ (36,0) \end{array}}$

Chapter 8:

Given the following matrices, find the indicated information.

$A = \begin{bmatrix} 1 & 2 \\ 5 & -4 \\ 6 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 \\ -2 & 1 \\ 4 & 4 \end{bmatrix}$, $C = \begin{bmatrix} 6 & -2 & 8 \\ 4 & 0 & 0 \end{bmatrix}$, $D = \begin{bmatrix} 3 & -1 \\ 5 & 4 \end{bmatrix}$

1) $A + B$

$\begin{bmatrix} 2 & 4 \\ 3 & -3 \\ 10 & 4 \end{bmatrix}$

2) $3C$

$\begin{bmatrix} 18 & -6 & 24 \\ 12 & 0 & 0 \end{bmatrix}$

3) $2A - 3B$

$2A = \begin{bmatrix} 2 & 4 \\ 10 & -8 \\ 12 & 0 \end{bmatrix}$ $3B: \begin{bmatrix} 3 & 6 \\ -6 & 3 \\ 12 & 12 \end{bmatrix}$

$2A - 3B = \begin{bmatrix} -1 & -2 \\ 16 & -11 \\ 0 & -12 \end{bmatrix}$

4) $|D|$ ← determinant

$\begin{vmatrix} 3 & -1 \\ 5 & 4 \end{vmatrix} = 3(4) - (5)(-1)$
$12 + 5$
17

5) D^{-1} ← inverse

$\frac{1}{17}\begin{bmatrix} 4 & 1 \\ -5 & 3 \end{bmatrix}$

$= \begin{bmatrix} 4/17 & 1/17 \\ -5/17 & 3/17 \end{bmatrix}$

6) BC

$\begin{bmatrix} 14 & -2 & 8 \\ -8 & 4 & -16 \\ 40 & -8 & 32 \end{bmatrix}$

...e the augmented matrix that corresponds to each system. Then solve it by writing the matrix in reduced-row echelon form.

7) $\begin{cases} -x+y+2z=1 \\ 2x+3y+z=-2 \\ 5x+4y+2z=4 \end{cases}$ (-1)

$\left[\begin{array}{ccc|c} -1 & -1 & -2 & -1 \\ 2 & 3 & 1 & -2 \\ 5 & 4 & 2 & 4 \end{array}\right]$

① $\begin{array}{l} -2R_1+R_2 \\ -5R_1+R_3 \end{array} \left[\begin{array}{ccc|c} 1 & -1 & -2 & -1 \\ 0 & 5 & 5 & 0 \\ 0 & 9 & 12 & 9 \end{array}\right]$ ② $\begin{array}{l} \frac{1}{5}R_2 \\ \frac{1}{3}R_3 \end{array} \left[\begin{array}{ccc|c} 1 & -1 & -2 & -1 \\ 0 & 1 & 1 & 0 \\ 0 & 3 & 4 & 3 \end{array}\right]$

③ $-3R_2+R_3 \left[\begin{array}{ccc|c} 1 & -1 & -2 & -1 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 3 \end{array}\right]$ ④ $R_1+R_2 \left[\begin{array}{ccc|c} 1 & 0 & -1 & -1 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 3 \end{array}\right]$

⑤ $\begin{array}{l} R_1+R_3 \\ -1R_3+R_2 \end{array} \left[\begin{array}{ccc|c} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & -3 \\ 0 & 0 & 1 & 3 \end{array}\right]$ $\{(2,-3,3)\}$

8) $\begin{cases} x+2y+z=6 \\ 2x+5y+15z=4 \\ 3x+y+3z=-6 \end{cases}$ Calc!

Augmented matrix:

$\left[\begin{array}{ccc|c} 1 & 2 & 1 & 6 \\ 2 & 5 & 15 & 4 \\ 3 & 1 & 3 & -6 \end{array}\right]$

$\left(-34/13,\ 24/5,\ -64/65\right)$

RREF

$\left[\begin{array}{ccc|c} 1 & 0 & 0 & -34/13 \\ 0 & 1 & 0 & 24/5 \\ 0 & 0 & 1 & -64/65 \end{array}\right]$

9) Evaluate $\begin{vmatrix} 10 & -5 & 5 \\ 30 & 0 & 10 \\ 0 & 10 & 1 \end{vmatrix}$ $\begin{matrix} + & - & + \\ - & + & - \\ + & - & + \end{matrix}$

$-30\begin{vmatrix} -5 & 5 \\ 10 & 1 \end{vmatrix} + 0 \begin{vmatrix} & \\ & \end{vmatrix} - 10\begin{vmatrix} 10 & -5 \\ 0 & 10 \end{vmatrix}$

$-30(-5-50)-10(100-0)$ → $-30(-55)-10(100)$

$1650-1000$

650

Solve the system using Cramer's Rule.

10) $\begin{cases} 5x+4y=2 \\ -x+y=-22 \end{cases}$

$x = \dfrac{\begin{vmatrix} 2 & 4 \\ -22 & 1 \end{vmatrix}}{9} = \dfrac{2+88}{9} \Rightarrow 10$

denom: $\begin{vmatrix} 5 & 4 \\ -1 & 1 \end{vmatrix}$

$5-(4)(-1)$

9

$(10, -12)$

$y = \dfrac{\begin{vmatrix} 5 & 2 \\ -1 & -22 \end{vmatrix}}{9} = \dfrac{-110+2}{9} \Rightarrow -12$

Chapter 9:

Write the first 5 terms of each sequence using the given information. Determine if the sequences are arithmetic or geometric.

1) $a_1 = 4, \boxed{d = 12}$
arithmetic
4, 16, 28, 40, 52

2) $a_1 = 25;\ a_k = a_{k-1} \boxed{+3}$ arithmetic
25, 28, 31, 34, 37

3) $a_1 = 2; \boxed{r = \frac{1}{2}}$ geometric
$2, 1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}$

4) $A_1 = -1;\ A_{K+1} = 3(A_K)$
multiply ⇒ Geometric
-1, -3, -9, -27, -81

Write the explicit formula for the nth term for each sequence. Then, find the indicated term.

5) $5, 11, 17, 23, \dots$ 15th term

6 6 6

$a_n = 5 + 6(n-1)$

$5 + 6n - 6$

$a_n = 6n - 1$

$a_{15} = 89$

6) $12, 6, 3, \frac{3}{2} \dots$ 20th term

$\frac{1}{2}$ $\frac{1}{2}$

$a_n = 12\left(\frac{1}{2}\right)^{n-1}$

$a_{20} = 12(1/2)^{19}$

$a_{20} = 2.29 \times 10^{-5}$

Find the sum.

7) $\sum_{k=2}^{8} \frac{k}{k+1}$

$\frac{2}{3} + \frac{3}{4} + \frac{4}{5} + \frac{5}{6} + \frac{6}{7} + \frac{7}{8} + \frac{8}{9}$

$\frac{14291}{2520}$

8) $\sum_{n=1}^{10} (2n - 3)$ Finite arithmetic

$S_{10} = \frac{10}{2}(-1 + 17)$

$= 5(16)$

$= 80$

9) $\sum_{j=1}^{\infty} \frac{5}{10^j}$ $a_1 = 1/2$ $a_2 = 1/20$

∞ geometric $r = 1/10$

$S = \frac{1/2}{1 - 1/10} = \frac{1/2}{9/10} = \frac{5}{9}$

10) $5, 10, 20, 40, \dots$ Infinite geometric

2 2 2

$= \frac{5}{1-2} = \frac{5}{-1} = -5$

11) $\sum_{j=1}^{7} 2^{j-1}$

$2^0, 2^1, 2^2, 2^3, 2^4, 2^5, 2^6$

$1 + 2 + 4 + 8 + 16 + 32 + 64$ $= 127$

or

$S_n = a_1\left(\frac{1-r^n}{1-r}\right)$

$S_7 = 1\left(\frac{1-2^7}{1-2}\right) = 127$

12) $\sum_{k=1}^{\infty} \left(\frac{1}{3}\right)^{k-1}$

infinite geometric

$a_1 = 1$ $r = 1/3$

$S_\infty = \frac{1}{1 - 1/3} = \frac{1}{2/3}$ $\frac{3}{2}$

Use the Binomial Theorem to expand the expression.

13) $(x + 4)^4$ 1 4 6 4 1

$1(x)^4(4)^0 + 4(x)^3(4)^1 + 6(x)^2(4)^2 + 4(x)^1(4)^3 + 1(x)^0(4)^4$

$x^4 + 16x^3 + 96x^2 + 256x + 256$

14) $(a - 3b)^5$ 1 5 10 10 5 1

$1(a)^5(-3b)^0 + 5(a)^4(-3b)^1 + 10(a)^3(-3b)^2 + 10(a)^2(-3b)^3$

$+ 5(a)^1(-3b)^4 + 1(a)^0(-3b)^5$

$a^5 - 15a^4b + 90a^3b^2 - 270a^2b^3 + 405ab^4 - 243b^5$

Find each

15) What is the coefficient of x^4y^6 in the expansion of $(2x - 3y)^{10}$?

${}_{10}C_6(2x)^4(-3y)^6$ $210(16x^4)(729y^6) = 2{,}449{,}440$

16) What is the 4th term in the expansion of $(2x - 3y)^{10}$?

x^7y^3

${}_{10}C_3(2x)^7(-3y)^3$ $120(128x^7)(-27y^3) = -414720x^7y^3$

17) A die is tossed two times. What is the probability that you will roll and even number both times?

$2, 4, 6 = 3/6 = 1/2$

$\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

18) You have a bag of 10 blue, 4, green, and 8 red jolly ranchers. If you pick 2 jolly ranchers from the bag at random, without replacement, what is the probability that they will both be blue?

22-total

$\frac{10}{22} \cdot \frac{9}{21} = \frac{90}{462} = \frac{13}{66} \approx 0.197$

one less

the number of distinguishable arrangements of the letters in the word.

19) BASKETBALL $\frac{10!}{2!\,2!\,2!}$

453,600 ways

20) HELEN $\frac{5!}{2!} = \frac{5\cdot4\cdot3\cdot2!}{2!}$

60 ways

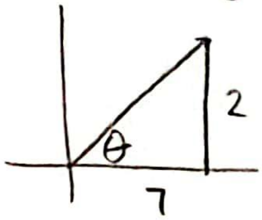
Chapter 10

Find the indicated information.

1) Find the inclination θ of the line
$2x - 7y + 3 = 0$

$7y = 2x+3$

$y = 2/7x + 3/7$



$\frac{2}{7} = \tan\theta$

$\theta = \tan^{-1}(\frac{2}{7})$

$\theta = 15.9°$

2) Find the angle between lines
$3x + 2y - 4 = 0$ & $4x - 7y + 6 = 0$

$2y = -3x+4$ $\quad$ $7y = 4x+6$

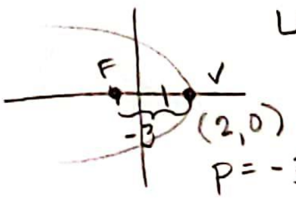
$y = -3/2x + 2$ $\quad$ $y = 4/7x + 6/7$

$\tan\theta = \left|\frac{4/7 - (-3/2)}{1 + (-3/2)(4/7)}\right|$

$\tan\theta = \frac{29/14}{1/7}$

$\theta = \tan^{-1}(14.5)$ $\quad$ 86.1°

3) Find the standard form of the ~~of the~~ parabola with a vertex at (2,0) and the focus at (−1,0)



p = -3

Left opens $(y-k)^2 = 4p(x-h)$

$(y-0)^2 = 4p(x-2)$

$y^2 = -12(x-2)$

4) Use the equation of the parabola to find the indicated information: $y^2 - 6y + 9 + 16x + 32 = 0$

a. Standard Form $(y-3)^2 = -16(x+2)$

b. Vertex $(-2, 3)$

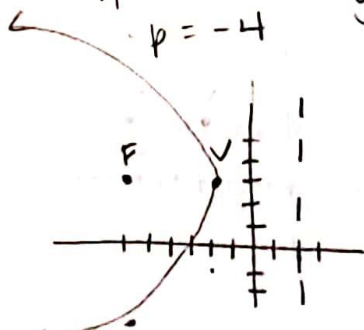
c. Focus $(-6, 3)$

d. Directrix $x = 2$

e. Sketch the parabola

$4p = -16$

$p = -4$



$y^2 - 6y + 16x + 41 = 0$

$y^2 - 6y + 9 = -16x - 41 + 9$

$(y-3)^2 = -16x - 32$

$(y-3)^2 = -16(x+2)$

5) Find the center, vertices, foci, and eccentricity of the ellipse. Then sketch it.

$$\frac{(x-4)^2}{12} + \frac{(y+3)^2}{16} = 1$$

b^2 $\quad$ a^2

$a^2 = 16$ $\quad$ $a = 4$

$b^2 = 12$ $\quad$ $b = \sqrt{12}$

$a^2 - b^2 = c^2$

$16 - 12 = c^2$

$4 = c^2$ $\quad$ $c = 2$

center: $(4, -3)$

Foci: $(4, -1)$

$(4, -5)$

eccentricity $= \frac{c}{a}$

$2/4 = 1/2$