

## Test 25

- 1) D 2) D 3) A 4) C 5) B

6) B  $X = \frac{-(8)}{2(1)} = \frac{8}{2} = 4$

$$Y = (4)^2 - 8(4) + 1$$

$$Y = 16 - 32 + 1 = -15$$

$$\text{vertex} = (4, -15)$$

7) C  $X = \frac{-6}{2(-3)} = \frac{-6}{-6} = 1$

$$Y = -3(1)^2 + 6(1)$$

$$Y = -3 + 6 = 3$$

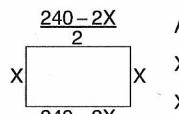
$$\text{vertex} = (1, 3)$$

8) A  $X = \frac{(-4)}{2(\frac{1}{2})} = \frac{4}{1} = 4$

$$Y = \frac{1}{2}(4)^2 - 4(4)$$

$$Y = 8 - 16 = -8$$

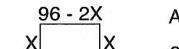
$$\text{vertex} = (4, -8)$$

9) D  Area =  $X\left(\frac{240-2X}{2}\right) = X(120-X) = -X^2 + 120X$

$$X = \frac{-120}{2(-1)} = 60$$

$$Y \text{ (or area)} = -(60)^2 + 120(60)$$

$$= -3600 + 7200 = 3,600 \text{ ft}^2$$

10) B  Area =  $X(96 - 2X)$

$$96X - 2X^2 = -2X^2 + 96X$$

$$X = 24' \quad X = \frac{-96}{2(-2)} = 24$$

$$96 - 2(24) = 48'$$

11) B  $3\sqrt{-27} - 4\sqrt{-8} = 3\sqrt{-9 \cdot 3} - 4\sqrt{-4 \cdot 2} = 9i\sqrt{3} - 8i\sqrt{2}$

12) A  $9i\sqrt{-64} = 9i \cdot 8i = 72(i)(i) = -72$

13) A  $\frac{2i}{8+5i} \cdot \frac{(8-5i)}{(8-5i)} = \frac{(2i)(8)-(2i)(5i)}{64+25} = \frac{16i+10}{89}$

14) D Using quadratic formula:

$$\frac{-2 \pm \sqrt{2^2 - 4(2)(-5)}}{2(2)} =$$

$$\frac{-2 \pm \sqrt{4+40}}{4} = \frac{-2 \pm \sqrt{4 \cdot 11}}{4} =$$

$$\frac{-2 \pm 2\sqrt{11}}{4} = \frac{-1 \pm \sqrt{11}}{2}$$

15) B

## Test 26

- 1) D A) is obviously a hyperbola  
B)  $X = \frac{16}{Y} \rightarrow XY = 16$  (hyperbola)  
C) difference of 2 squares (hyperbola)  
D) equation of an ellipse

2) A

3) D

4) C  $(-1)(-6) = 6$

5) C  $X^2 - (-1)^2 = 8$

$$X^2 - 1 = 8$$

$$X^2 = 9$$

$$X = \pm 3$$

6) D Point  $(-4, \frac{1}{4})$  is in Quadrant II

Point  $(4, -\frac{1}{4})$  is in Quadrant IV

7) B A) ellipse

B) difference of 2 squares form

C) regular hyperbola

D) parabola

8) A A) first and third quadrants

B) difference of 2 squares

C) second and fourth quadrants

D) parabola

9) C A) first and third quadrants

B) difference of 2 squares

C) second and fourth quadrants

D) parabola

10) D A) first and third quadrants

B) second and fourth quadrants

C) ellipse

D) difference of 2 squares form

11) C Slope = -2

$$0 = -$$

$$2(0) + b$$

12) A  $\frac{(-5+7)}{2}, \frac{-3+(-6)}{2} \rightarrow \left(\frac{2}{2}, \frac{-9}{2}\right) \rightarrow (1, -\frac{9}{2})$

13) B

14) D  $299 - 254 = \$45$  markup

$$\text{WP} \times 299 = 45$$

$$\text{WP} = \frac{45}{299} \approx .15 = 15\%$$

15) D  $\frac{23}{23+35} = \frac{23}{58} \approx .40 = 40\%$

## Test 27

1) C

2) A

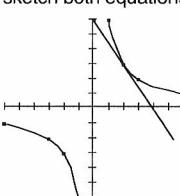
- 3) D Change second equation to slope-intercept form:

$$3X + 2Y = 12$$

$$2Y = -3X + 12$$

$$Y = \frac{-3}{2}X + 6$$

sketch both equations:



plot points for first equation:  
 $XY = 6$

X	Y
-6	-1
-3	-2
-2	-3
-1	-6
1	6
2	3
3	2
6	1

substitute  $-\frac{3}{2}X + 6$  in place of Y in

second equation, and solve:

$$(X)\left(\frac{-3}{2}X + 6\right) = 6 \rightarrow -\frac{2}{3}\left[\frac{-3}{2}X^2 + 6X - 6 = 0\right]$$

$$X^2 - 4Y + 4 = 0 \rightarrow (X-2)(X+2) = 0 \rightarrow X = 2$$

substitute 2 in original equation, and solve for y:

$$3(2) + 2Y = 12 \rightarrow Y = 3$$

$$(2, 3)$$

checking:  $(2)(3) = 6$

(true)

so solution is  $(2, 3)$

4) B circle and line

5) C

$$X^2 + (X-3)^2 = 9$$

$$X^2 + X^2 - 6X + 9 - 9 = 0$$

$$2X^2 - 6X = 0$$

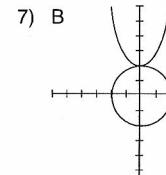
$$2X(X-3) = 0 \rightarrow X = 0, 3$$

$$Y = (0) - 3 \quad Y = (3) - 3$$

$$Y = -3 \quad Y = 0$$

$$(0, -3) \quad (3, 0)$$

6) D (see illustration for #8)



$$x^2 + (x^2 + 2)^2 = 4$$

$$x^2 + x^4 + 4x^2 + 4 - 4 = 0$$

$$5x^2 + x^4 = 0$$

$$x^2(x^2 + 5) = 0$$

$$x^2 = 0 \quad x^2 = -5$$

$$x = 0 \quad x = \sqrt{-5} = \sqrt{5}i$$

$$y = (0)^2 + 2 \quad \text{invalid solution}$$

$$y = 2 \rightarrow (0, 2)$$

- 8) A Make sketch:

$$x^2 - y^2 = 16$$

$$x^2 - (0)^2 = 16$$

$$x = \pm 4$$

$$\begin{array}{|c|c|} \hline x & y \\ \hline \pm 4 & 0 \\ \hline \pm \sqrt{20} & 2 \\ \hline 0 & \pm 4 \\ \hline \end{array}$$

$$x^2 + y^2 = 34$$

$$\frac{x^2}{25} - \frac{y^2}{25} = 1$$

$$x^2 = 25$$

$$x = \pm 5$$

$$(5)^2 + y^2 = 34$$

$$25 + y^2 = 34$$

$$y^2 = 9$$

$$y = \pm 3$$

- 9) C

- 10) C

- 11) A

$$\frac{176-2X}{2}$$

$$A = X\left(\frac{176-2X}{2}\right) =$$

$$88X - X^2 =$$

$$-X^2 + 88X$$

$$X = \frac{-88}{2(-1)} = 44$$

$$Y = -(44)^2 + 88(44) = -1936 + 3872 = 1936 \text{ ft}^2$$

12) A  $\frac{A}{BC} = \frac{D}{E} \rightarrow AE = BCD \rightarrow \frac{AE}{CD} = B$

13) C  $1,200,000,000 = 1.2 \times 10^9$

$$3,000,000 = 3.0 \times 10^6$$

$$(1.2 \times 3.0)(10^9 \times 10^6) = 3.6 \times 10^{15}$$

- 14) B  $D = RT$

$$18 = (15 - 3)T$$

$$\frac{18}{12} = T$$

$$1.5 = T$$

- 15) D  $3 \times 1.6 = 4.8 \text{ km}$

$$2 \times 1.6 = 3.2 \text{ km}$$

$$4.8 \times 3.2 = 15.36 \text{ km}^2$$