

Test 25

- 1) D 2) D 3) A 4) C 5) B
- 6) B $X = \frac{-(-8)}{2(1)} = \frac{8}{2} = 4$
 $Y = (4)^2 - 8(4) + 1$
 $Y = 16 - 32 + 1 = -15$
vertex = (4, -15)
- 7) C $X = \frac{-6}{2(-3)} = \frac{-6}{-6} = 1$
 $Y = -3(1)^2 + 6(1)$
 $Y = -3 + 6 = 3$
vertex = (1, 3)
- 8) A $X = \frac{-(-4)}{2(\frac{1}{2})} = \frac{4}{1} = 4$
 $Y = \frac{1}{2}(4)^2 - 4(4)$
 $Y = 8 - 16 = -8$
vertex = (4, -8)
- 9) D $\frac{240-2X}{2}$ Area = $X(\frac{240-2X}{2}) =$
 $X(120-X) = -X^2 + 120X$
 $X = \frac{-120}{2(-1)} = 60$
 $Y \text{ (or area)} = -(60^2) + 120(60)$
 $= -3600 + 7200 = 3,600 \text{ ft}^2$
- 10) B $\frac{96-2X}{2}$ Area = $X(96-2X)$
 $96X - 2X^2 = -2X^2 + 96X$
 $X = 24'$ $X = \frac{-96}{2(-2)} = 24$
 $96 - 2(24) = 48'$
- 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 = -
- 12) A $\frac{(-5+7)}{2}, \frac{-3+(-6)}{2} \rightarrow (\frac{2}{2}, \frac{-9}{2}) \rightarrow (1, -\frac{9}{2})$
- 13) B
- 14) D $299 - 254 = \$45$ markup
 $WP \times 299 = 45$
 $WP = \frac{45}{299} \approx .15 = 15\%$
- 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:
- | 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:
 $(X)(-\frac{3}{2}X + 6) = 6 \rightarrow -\frac{3}{2}X^2 + 6X - 6 = 0$
 $X^2 - 4X + 4 = 0 \rightarrow (X-2)(X-2) = 0 \rightarrow X = 2$
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) (3, 0)

- 7) B $X^2 + (X^2 + 2)^2 = 4$
 $X^2 + X^4 + 4X^2 + 4 - 4 = 0$
 $5X^2 + X^4 = 0$
 $X^2(X^2 + 5) = 0$
 $X^2 = 0 \quad X^2 = -5$
 $X = 0 \quad X = \sqrt{-5} = \sqrt{5}i$
 $Y = (0)^2 + 2$ invalid solution
 $Y = 2 \rightarrow (0, 2)$
- 8) A Make sketch: $X^2 - Y^2 = 16$
 $X^2 - (0)^2 = 16$
 $X = \pm 4$
 $* \approx \pm 4.5$
- | X | Y |
|-------------------|---------|
| ± 4 | 0 |
| $\pm \sqrt{20} *$ | 2 |
| 0 | ± 4 |
- Work solution:
 $X^2 + Y^2 = 34$
 $\frac{X^2 - Y^2}{X^2 + Y^2} = \frac{16}{34}$
 $2X^2 = 50$
 $X^2 = 25$
 $X = \pm 5$
 $(5)^2 + Y^2 = 34$
 $25 + Y^2 = 34$
 $Y^2 = 9$
 $Y = \pm 3$
- 9) C
- 10) C
- 11) A $\frac{176-2X}{2}$ Area = $X(\frac{176-2X}{2}) =$
 $88X - X^2 =$
 $-X^2 + 88X$
 $X = \frac{-88}{2(-1)} = 44$
 $Y = -(44)^2 + 88(44) = -1936 + 3872 = 1936 \text{ ft}^2$
- 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 $3 \times 1.6 = 4.8 \text{ km}$
 $2 \times 1.6 = 3.2 \text{ km}$
 $4.8 \times 3.2 = 15.36 \text{ km}^2$