Test 21

1) B

2) D

3) A $2Y = 4X + 3 \rightarrow Y = 2X + \frac{3}{2}$ (same slope)

4) D Slope would be -4

5) C Slope will be 2
$(-2) = 2(2) + b$
$-2 = 4 + b$
$-6 = b \quad Y = 2X - 6$

6) B Slope will be $-\frac{1}{2}$
$-2 = \left(-\frac{1}{2}\right)(2) + b$
$-2 = -1 + b$
$-1 = b \qquad Y = -\frac{1}{2}X - 1$

7) A

8) D Substitute (0, 0) $0 > 2(0) - 3$
$0 > -3$ true
> sign indicates dotted line

9) C Same as above, but ≥ indicates solid line

10) B Substitute (0, 0) $0 < 2(0) - 3$
$0 < -3$ false
< sign indicates dotted line

---

11) C  trapezoid

12) C $X^4 - 1$ factors to $(X^2 - 1)(X^2 + 1)$, so
$(X^4 - 1) \div (X^2 - 1) = X^2 + 1$

13) D By definition supplementary angles add to 180°. They may or may not be congruent.

14) B $3|-4-2| + 1 - 2(3-6)^2 =$
$3|-6| + 1 - 2(-3)^2 =$
$3(6) + 1 - 2(9) =$
$18 + 1 - 18 = 1$

15) A $8^{-1/3} = \frac{1}{8^{1/3}} = \frac{1}{\sqrt[3]{8}} = \frac{1}{2}$

Test 22

1) A

2) C

3) B $\left(\frac{X_1 + X_2}{2}, \frac{Y_1 + Y_2}{2}\right)$

4) A

5) D A = (-2, 1) C = (3, 2)
$D = \sqrt{[3-(-2)]^2 + (2-1)^2}$
$D = \sqrt{25+1} = \sqrt{26}$

6) B B = (-1, 5) C = (3, 2)
$D = \sqrt{[3-(-1)]^2 + (2-5)^2}$
$D = \sqrt{16+9} = \sqrt{25} = 5$

7) A A = (-2, 1) D = (-1, -2)
$D = \sqrt{[-1-(-2)]^2 + (-2-1)^2}$
$D = \sqrt{1+9} = \sqrt{10}$

8) C B = (-1, 5) D = (-1, -2)
$M = \left(\frac{(-1)+(-1)}{2}, \frac{5+(-2)}{2}\right) \quad M = \left(-1, \frac{3}{2}\right)$

9) B D = (-1, -2) C = (3, 2)
$M = \left(\frac{-1+3}{2}, \frac{-2+2}{2}\right) \quad M = (1, 0)$

10) C A = (-2, 1) B = (-1, 5)
$M = \left(\frac{(-2)+(-1)}{2}, \frac{1+5}{2}\right) \quad M = \left(\frac{-3}{2}, 3\right)$

---

11) B $\frac{AB}{C} = \frac{Y}{X} \qquad CY = ABX$
$C = \frac{ABX}{Y}$

12) D $\frac{51}{T} = \frac{3}{7}$
$3T = 51 \cdot 7$
$T = \frac{51 \cdot 7}{3} = 119$

13) A

14) C $\frac{192.5 \cancel{cm}}{1} \cdot \frac{.4 \cancel{in}}{1 \cancel{cm}} \cdot \frac{1 \text{ ft}}{12 \cancel{in}} = 6.4$ ft (rounded)

15) D $8^2 + 10^2 = H^2$
$64 + 100 = H^2$
$\sqrt{164} = H$
$\sqrt{4 \cdot 41} = H$
$2\sqrt{41} = H$

Test 23

1) D

2) A

3) C

4) C Completing the square
$(X^2 - 6X + 9) + (Y^2 + 10Y + 25) = -18 + 9 + 25$
$(X-3)^2 + (Y+5)^2 = 16$
$(X-3)^2 + (Y+5)^2 = 4^2$

5) A

6) B

7) A Equal coefficients, so a circle
center at (-3, -3)

8) C Unequal coefficients, so an ellipse
Checking (0, 3) $\rightarrow 9(0)^2 + 4(3)^2 = 36$
$0 + 36 = 36$ (true)

9) D

10) D

---

11) C Checking all four

A) $-3^2 \div 3 + 6 =$
$-9 \div 3 + 6 = 3$

B) $(3)^2 \div 3 + 5 =$
$9 \div 3 + 5 = 8$

C) $-(3)^2 \div 3 + 5 =$
$-9 \div 3 + 5 = 2$

D) $(-3)^2 \div 3 + 4 =$
$9 \div 3 + 4 = 7$

12) B $\frac{2}{X} + \frac{6}{3X} - X^{-1} = \qquad (X \neq 0)$
$\frac{2(3X)}{X(3X)} + \frac{6(X)}{3X(X)} - \frac{1(3X)}{X(3X)} =$
$\frac{6X + 6X - 3X}{3X^2} = \frac{9X}{3X^2} = \frac{3}{X}$

13) B

14) A $D_{Dav} = D_{Dan}$
$R_{Dav}T_{Dav} = R_{Dan}T_{Dan}$
$4T_{Dav} = 6(T_{Dav} - 1)$
$4T_{Dav} = 6T_{Dav} - 6$
$6 = 2T_{Dav}$
$3 = T_{Dav} \qquad (4)(3) = 12$ miles

15) C Area of original rectangle = XY
Area of new rectangle = (3X)(3Y) = 9Y

Test 24

1) A The equation of a parabola always has one term squared

2) A Coefficient of X term is positive, X is squared term

3) D Coefficient of Y term is negative, Y is squared term

4) B Coefficient of squared term has the largest absolute value

5) C If $Y = (0)^2 + 2$, then Y = 2

6) A Y intercept is 1, graph opens up and is moderately narrow

7) C X intercept is -2, graph opens to the left and is wide

8) A Y intercept is 1, graph opens down and is wide

9) D X intercept is 1, graph opens to the right and is of average width

10) B Y intercept is -1, graph opens up and is of average width

---

11) B The point naming the vertex is always the middle of the three points naming an angle

12) D 

$R_1T_1 = D_1 \qquad D_1 + D_2 = 44$
$R_2T_2 = D_2 \qquad T_1 + T_2 = 6$
$R_1T_1 + R_2T_2 = 44 \qquad T_2 = 6 - T_1$
$4T_1 + 9(6 - T_1) = 44$
$4T_1 + 54 - 9T_1 = 44$
$-5T_1 + 54 = 44$
$-5T_1 = -10$
$T_1 = 2 \qquad T_2 = 6 - 2 = 4$ hrs

13) C $2(X + 1) + 2(3X) = 2X + 2 + 6X = 8X + 2$

14) C $2[3X(X+1)] + 2[3X(X)] + 2[X(X+1)] =$
$2(3X^2 + 3X) + 2(3X^2) + 2(X^2 + X) =$
$6X^2 + 6X + 6X^2 + 2X^2 + 2X = 14X^2 + 8X$

15) A $(X)(3X)(X+1) = 3X^2(X+1) = 3X^3 + 3X^2$