

Week 2 Material
Pre-Test

Solve each of the following Linear Equations (2 points each):

1. $x + 8 = 15$ $\quad -8 \quad -8$ $\boxed{x = 7}$	2. $x - 10 = 75$ $\quad +10 \quad +10$ $\boxed{x = 85}$
3. $\frac{8x}{8} = \frac{96}{8}$ $\boxed{x = 12}$	4. $\frac{x}{7} = 11$ $7 \cdot \left[\frac{x}{7} = 11 \right] \cdot 7$ $\boxed{x = 77}$

Solve each of the following Quadratic Equations (2 points each):

5. $2c^2 + 56c = -392$ $\quad +392 \quad +392$ $\frac{2c^2}{2} + \frac{56c}{2} + \frac{392}{2} = \frac{0}{2}$ $c^2 + 28c + 196 = 0$ $a = 1$ $b = 28$ $c = 196$ $x = \frac{-28 \pm \sqrt{(28)^2 - 4(1)(196)}}{2(1)}$ $x = \frac{-28 \pm \sqrt{0}}{2}$ $x = \frac{-28 \pm 0}{2}$ $\frac{-28+0}{2} = \frac{-28}{2} = \boxed{-14}$ $\frac{-28-0}{2} = \frac{-28}{2} = \boxed{-14}$	6. $-x^2 = -12x + 27$ $\quad +x^2 \quad +x^2$ $0 = x^2 - 12x + 27$ $a = 1$ $b = -12$ $c = 27$ $x = \frac{12 \pm \sqrt{(-12)^2 - 4(1)(27)}}{2(1)}$ $x = \frac{12 \pm \sqrt{36}}{2}$ $x = \frac{12 \pm 6}{2}$ $\frac{12+6}{2} = \frac{18}{2} = \boxed{9}$ $\frac{12-6}{2} = \frac{6}{2} = \boxed{3}$
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Solve the given Polynomial (4 points):

7. $2n^4 - 27n^2 = -3n^3$ $\quad +3n^3 \quad +3n^3$ $2n^4 - 3n^3 - 27n^2 = 0$ $n^2(2n^2 - 3n - 27) = 0$ \downarrow $q = 27: 1, 3, 9, 27$ $p = 2: 1, 2$ <u>Rational Rt Thm:</u> $\pm \frac{1}{1}, \pm \frac{3}{1}, \pm \frac{9}{1}, \pm \frac{27}{1}, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{9}{2}, \pm \frac{27}{2}$ $\pm 1, \pm 3, \pm 9, \pm 27, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{9}{2}, \pm \frac{27}{2}$	$2n^4 - 3n^3 - 27n^2$ changes No change means 1 positive Root $2n^4 + 3n^3 - 27n^2$ No change change means 1 neg Root $-3 \overline{) 2 \quad -3 \quad -27}$ $\quad \downarrow \quad -6 \quad 27$ $\quad \quad \quad \underline{2 \quad -9} \quad 0$ Gives $2x - 9$ So $n^2(n+3)(2x-9) = 0$ $n^2 = 0$ $n+3 = 0$ $2x-9 = 0$ $\boxed{n=0}$ $\boxed{n=-3}$ $\boxed{x = \frac{9}{2}}$
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Solve each of the following Exponential Equations (2 points each):

<p>8. $8^{3x+2} = 16^{-x-5}$</p> $(2)^{3(3x+2)} = (2)^{4(-x-5)}$ $\frac{9x+6}{+4x-6} = \frac{-4x-20}{+4x-6}$ $\frac{13x}{13} = \frac{-26}{13}$ <div style="border: 1px solid red; padding: 5px; display: inline-block;">$x = -2$</div>	<p>9. $2^{x+2} = 2^{-3x-7}$</p> $\frac{x+2}{+3x-2} = \frac{-3x-7}{+3x-2}$ $\frac{x}{4} = \frac{-9}{4}$ <div style="border: 1px solid red; padding: 5px; display: inline-block;">$x = -\frac{9}{4}$</div>
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Solve each of the following Logarithmic Equations (2 points each):

<p>10. $\log_9(7x-5) = \log_9(-10)$</p> $\frac{7x-5}{+5} = \frac{-10}{+5}$ $\frac{7x}{7} = \frac{-5}{7}$ <div style="border: 1px solid red; padding: 5px; display: inline-block;">$x = -\frac{5}{7}$</div>	<p>11. $-2 = \log_2 - \log(3+x)$</p> $-2 = \log \frac{2}{3+x}$ $10^{-2} = \frac{2}{3+x}$ $\frac{1}{100} = \frac{2}{3+x}$ <div style="border: 1px solid red; padding: 5px; display: inline-block;">$x = 197$</div>
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Identify the midpoint of each of the following (2 points each):

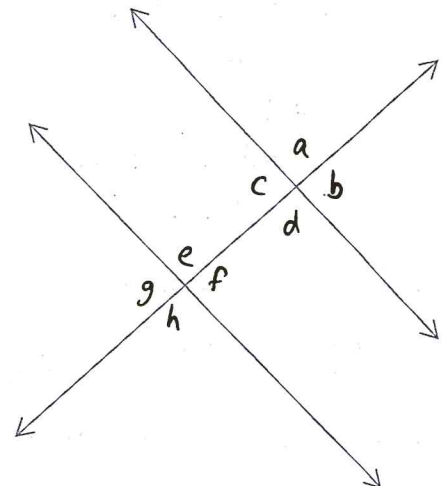
<p>12. $(-5,7) \text{ \& } (8,-12)$</p> $\left(\frac{-5+8}{2}, \frac{7+(-12)}{2} \right) = \left(\frac{3}{2}, \frac{-5}{2} \right)$	<p>13. $(3,-1) \text{ \& } (4,0)$</p> $\left(\frac{3+4}{2}, \frac{-1+0}{2} \right) = \left(\frac{7}{2}, \frac{-1}{2} \right)$
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Find the distance between the given points:

<p>14. $(-5,7) \text{ \& } (8,-12)$</p> $\sqrt{(-5-8)^2 + (7+12)^2}$ $\sqrt{(-13)^2 + (19)^2}$ $\sqrt{169+361} = \sqrt{530}$	<p>15. $(3,-1) \text{ \& } (4,0)$</p> $\sqrt{(3-4)^2 + (-1-0)^2}$ $\sqrt{(-1)^2 + (-1)^2}$ $\sqrt{1+1} = \sqrt{2}$
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Identify each of the following using the diagram to the right:

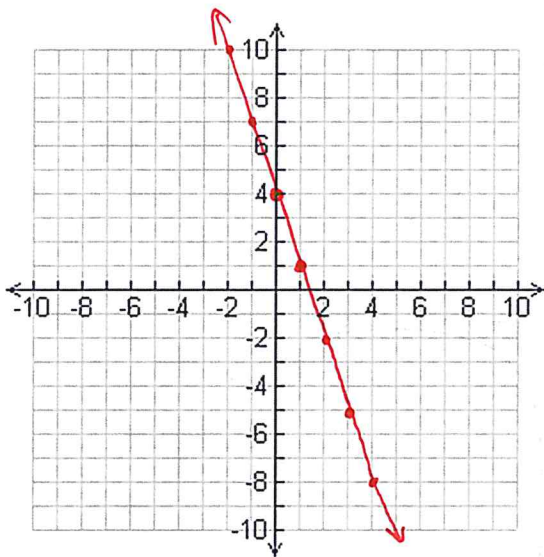
- List all the pairs of Corresponding Angles.
 $g \hat{=} c$ $e \hat{=} a$ $h \hat{=} d$ $f \hat{=} b$
- List all the pairs of Alternate Interior Angles.
 $c \hat{=} f$ $e \hat{=} d$
- List all the pairs of Alternate Exterior Angles.
 $g \hat{=} b$ $h \hat{=} a$
- List the Same-Side Interior Angles.
 $c \hat{=} e$ $f \hat{=} d$
- List all of the Vertical Angles.
 $g \hat{=} f$ $h \hat{=} e$ $c \hat{=} b$ $a \hat{=} d$



Graph each of the following functions:

21. LINEAR

$$y = -3x + 4$$

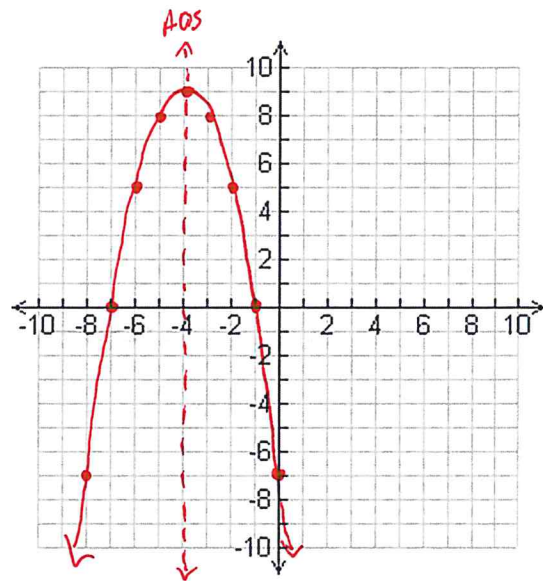


Slope = -3
means down 3, right 1

$b = 4$
means dot on (0, 4)

22. QUADRATIC

$$f(x) = -x^2 - 8x - 7$$



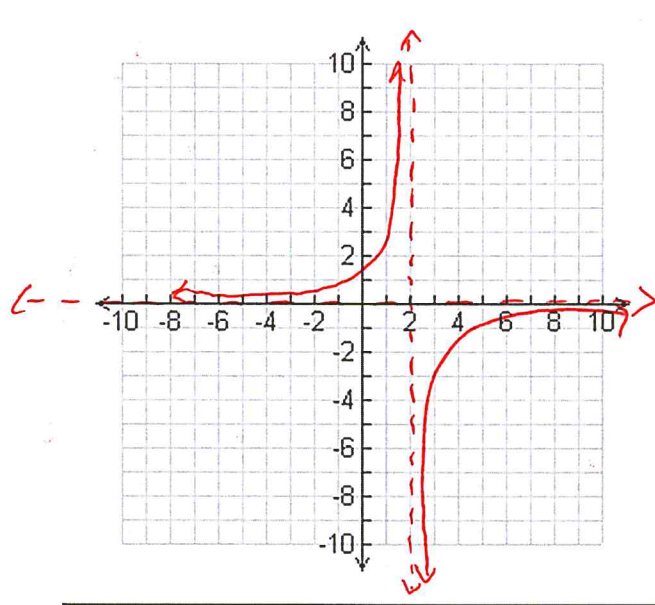
$$\text{AOS} \Rightarrow x = \frac{-b}{2a} = \frac{8}{2(-1)} = \frac{8}{-2} = -4$$

x	$f(x) = -(x)^2 - 8(x) - 7$	$(x, f(x))$
-7	$-(-7)^2 - 8(-7) - 7$	$(-7, 0)$
-6	$-(-6)^2 - 8(-6) - 7$	$(-6, 5)$
-5	$-(-5)^2 - 8(-5) - 7$	$(-5, 8)$
-4	$-(-4)^2 - 8(-4) - 7$	$(-4, 9)$
-3	$-(-3)^2 - 8(-3) - 7$	$(-3, 8)$
-2	$-(-2)^2 - 8(-2) - 7$	$(-2, 5)$
-1	$-(-1)^2 - 8(-1) - 7$	$(-1, 0)$

Graph each of the following functions:

23. RATIONAL FUNCTION

$$f(x) = \frac{-1}{x-2}$$



Vertical Asymptote

$$\begin{array}{r} x-2=0 \\ +2 \quad +2 \\ \hline x=2 \end{array}$$

Horizontal Asymptote

$$\frac{-1}{x} \text{ since } x \text{ in denominator } y=0$$