~~18~~ Final Review Day 1 - 12/5/12 Math 1010

~~24~~ 39

42

48

#18 $\ln e^{2x} = 4$

$\ln e^{2x} = 2x$

$\log_e e^{2x}$

$2x = 4$

$x = 2$

Way 2

$\ln e^{2x} = 4$

$2x \ln e = 4$

$2x \cdot 1 = 4$

$2x = 4$

#24 $e^{\ln(6-x)} = e^{\ln(4+2x)}$

$\ln(6-x) = \ln(4+2x)$

$6 - x = 4 + 2x$

then Solve

$2^x = 2^5$

$\log_a x = \log_a 4$

$x = y$

Way 2

$e^{\ln(6-x)} = e^{\ln(4+2x)}$

$6 - x = 4 + 2x$

$a^{\log_a x} = x$

39

$$\log 4x - \log(x-3) = \log 2$$

$$\log\left(\frac{4x}{x-3}\right) = \log 2$$

$$x-3 \cdot \frac{4x}{x-3} = 2 \cdot x-3$$

Property: $\log_a x = \log_a y \Rightarrow x = y$

$$4x = 2(x-3)$$

$$4x = 2x - 6$$

$$-2x \quad -2x$$

$$\frac{2x}{2} = \frac{-6}{2}$$

$$\cancel{x = -3}$$

No Solution

42

$\log(2x-1) + \log 10x = \log 10$

$\log(2x-1) + \log 10x = 1$

$\log_{10}((2x-1)(10x)) = 1$ ↙ Exponentiate

$10^{\log((2x-1)(10x))} = 10^1$

$(2x-1)(10x) = 10$

$20x^2 - 10x = 10$

$20x^2 - 10x - 10 = 0$

$10(2x^2 - x - 1) = 0$

$10(x-1)(2x+1) = 0$

-2	-1
$-2, 1$	✓

$x - 1 = 0$

$+1 \quad +1$

$\boxed{x = 1}$

$2x + 1 = 0$

$-1 \quad -1$

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

~~$x = -\frac{1}{2}$~~

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

$\frac{1}{2} = 1/2$

#48 a) $A = P(1 + \frac{r}{n})^{nt}$

$P = \$3000$

$r = .035$

$t = 7$

$n = 4$

$A = ?$

$.35 = 35\%$

$.035 = 3.5\%$

$A = 3000(1 + \frac{.035}{4})^{4 \cdot 7}$

$= 3000(1 + .00875)^{28}$

$= 3000(1.00875)^{28}$

$= 3000(1.27626260524)$

$= \$3828.78$

b) $A = P(1 + \frac{r}{n})^{nt}$

$P = 3000$

$r = .035$

$t = ?$

$n = 4$

$A = 5000$

$5000 = 3000(1 + \frac{.035}{4})^{4t}$

$\frac{5000}{3000} = \frac{3000(1.00875)^{4t}}{3000}$

$5/3 = 1.00875^{4t}$

$\log(5/3) = \log 1.00875^{4t}$

$\log(5/3) = 4t \log 1.00875$

$\frac{\log(5/3)}{\log 1.00875} = \frac{4t \log 1.00875}{\log 1.00875}$

$\frac{58.6351}{4} = \frac{4t}{4}$

$t = 14.658$

$t = 14.7$ yrs

Solving Quadratics | Review Packet

option 1: Quadratic formula

option 2: factoring

option 3: Completing the Square

#4 $4r^2 - 31r - 8 = 0$

ac	b
4(-8)	
-32	-31
~~+32, +1~~	~~31~~
-32, +1	-31 ✓

$(r-8)(4r+1) = 0$

$r - 8 = 0$ $\quad +8 \quad +8$

$r = 8$,

$4r + 1 = 0$

$-1 \quad -1$

$\frac{4r}{4} = \frac{-1}{4}$

$r = -1/4$

$\frac{-32}{4} = -8$

$\frac{1}{4} = 1/4$

$\{-1/4, 8\}$ ← D

#3 $y \geq -3x - 1$ and $x - y \geq -1$

↑ want common shading

$y = -3x - 1$

$y = mx + b$

↑ slope ↑ y-int

slope $= -3/1$ ← rise / run

$0 \geq -3(0) - 1$

$0 \geq -1$

true

$-x \quad -x$

$\frac{-y}{-1} \geq \frac{-x}{-1} - \frac{1}{-1}$

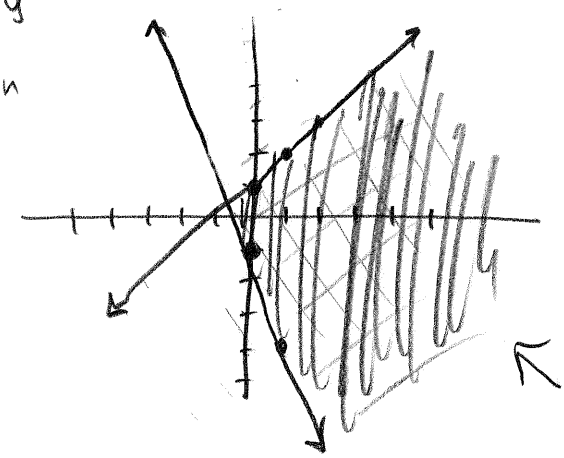
$y \leq x + 1$

slope $= 1/1$ ↑ y-int

$0 \leq 0 + 1$

$0 \leq 1$

true



↖ A

#6 Simple Interest: $I = pr$

	P	r	I
@ 8%	x	.08	$.08x$
@ 11%	$4000+2x$	.11	$.11(4000+2x)$

4940

$$.08x + .11(4000+2x) = 4940$$

$$.08x + 440 + .22x = 4940$$

$$.3x + 440 = 4940$$
$$-440 \quad -440$$

$$\frac{.3x}{.3} = \frac{4500}{.3}$$

$x = 15{,}000 \leftarrow$ @ 8%

$4000 + 2(15000)$

$4000 + 30{,}000$

$34{,}000 \leftarrow$ @ 11%

↖ C