12/10/12 - Final Exam Review Day 4 Math 1010

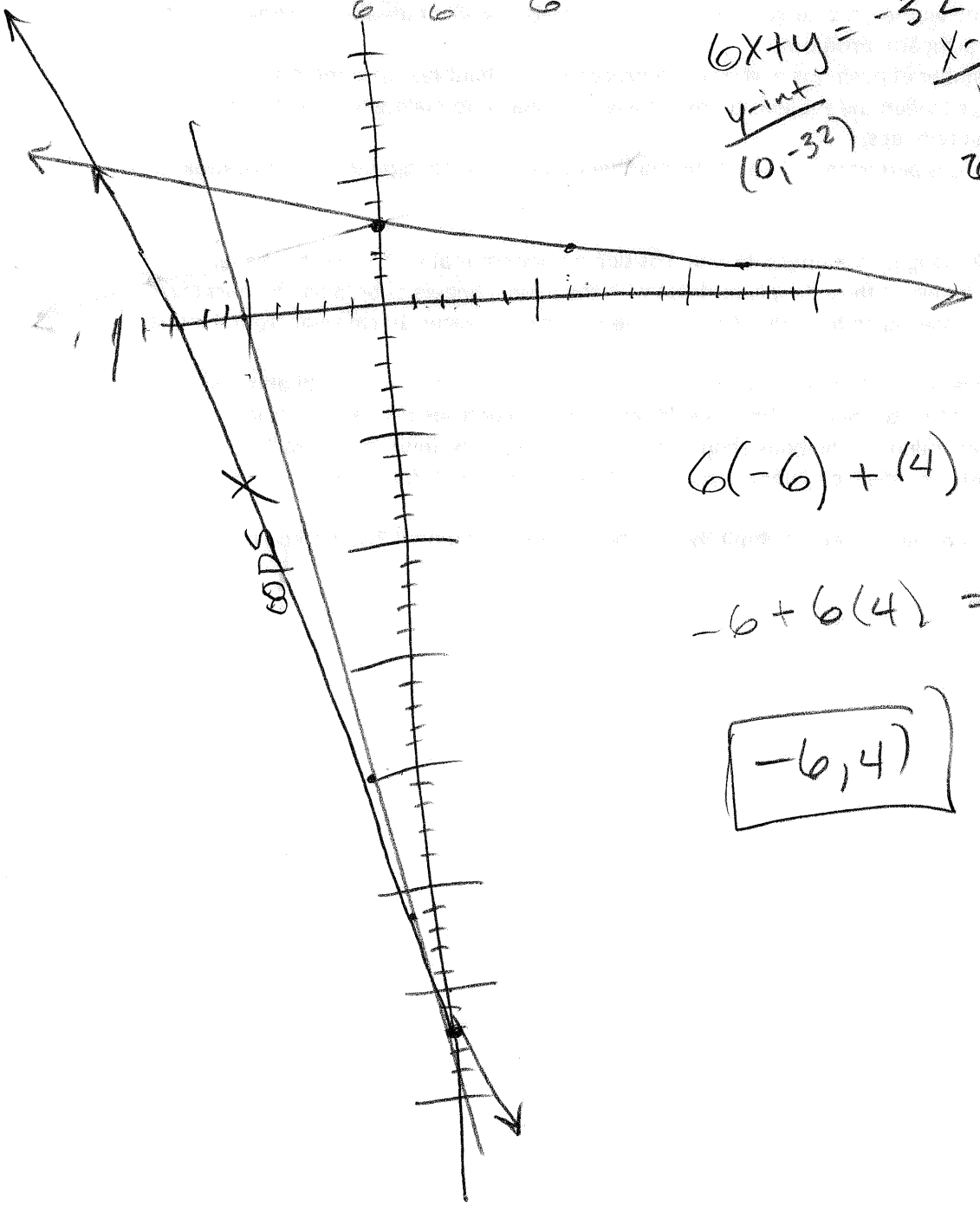
#100

Solve by Graphing

$6x + y = -32 \Rightarrow y = -6x - 32$

$x + 6y = 18 \Rightarrow y = -\frac{1}{6}x + 3$

$\frac{6y}{6} = \frac{-x}{6} + \frac{18}{6}$



$6x + y = -32$

y-int

$(0, -32)$

x-int

$y = 0$

$6x = -32$

$x = -\frac{32}{6}$

$6(-6) + (4) = -32$

$-6 + 6(4) = 18$

$(-6, 4)$

#103 $(2x^3 - 5x^2 - 7x - 12) \div (x-4)$

$$2x^2 + 3x + 5$$

$$x-4 \;\overline{)\; 2x^3 - 5x^2 - 7x - 12}$$

$$-2x^3 \pm 8x^2 \downarrow$$

$$3x^2 - 7x$$

$$-3x^2 \pm 12x \downarrow$$

$$5x - 12$$

$$-5x \pm 20$$

$$8$$

$$2x^2 + 3x + 5 + \frac{8}{x-4}$$ ← D

#107 3 consecutive odd integers

1, 2, 3, 4, 5,
1, 3, 5, 7,

1st = x = 13
2nd = $x+2$ = 15
3rd = $x+4$ = 17 (A)

1st + 3rd = 5·2nd − 45

$x + x+4 = 5(x+2) - 45$

$2x+4 = 5x+10-45$

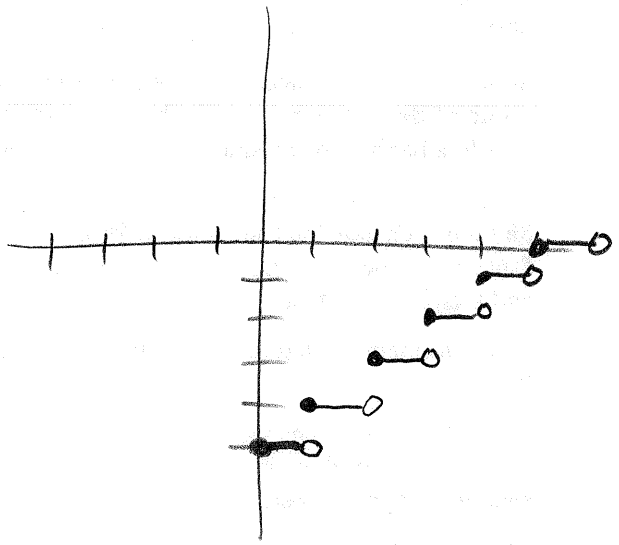
$2x+4 = 5x-35$
$-5x \quad -4 \quad -5x \quad -4$

$\frac{-3x}{-3} = \frac{-39}{-3}$

$x = 13$

#105 $f(x) = [\![x-5]\!]$

x	y
0	$[\![0-5]\!] = [\![-5]\!] = -5$
1	$[\![1-5]\!] = [\![-4]\!] = -4$
½	$[\![\frac{1}{2}-5]\!] = [\![-4.5]\!] = -5$



Brackets: closed dots
Because included
(Like ≥ or ≤)

Parentheses: open dots
Because Not included
(Like > or <)

#111

$2 \cdot A = \frac{h(B+b)}{2} \cdot 2$ solve for B

$\frac{2A}{h} = \frac{h(B+b)}{h}$

$\frac{2A}{h} = B + b$

$-b \quad -b$

$B = \frac{2A}{h} - \frac{b}{1} \cdot \frac{h}{h}$

$= \frac{2A}{h} - \frac{bh}{h}$

$B = \frac{2A - bh}{h}$ ← C

#108 $y^3 - 343$ (7^3)

difference of squares

difference of cubes

sum of cubes

$a^3 - b^3$

$(a-b)(a^2+ab+b^2)$

$a = y$

$b = 7$

$(y-7)(y^2+7y+49)$

D

#109 $\dfrac{a^{-2}-b^{-1}}{8a^{-1}+3b^{-2}}$

LCD: a^2b^2

$= \dfrac{\frac{1}{a^2}-\frac{1}{b}}{\frac{8}{a}+\frac{3}{b^2}}$

$\frac{1}{a^2} \cdot \frac{a^2b^2}{1}$

$\frac{b^2}{1}$

$\dfrac{\left(\frac{1}{a^2}-\frac{1}{b}\right)\frac{a^2b^2}{1}}{\left(\frac{8}{a}+\frac{3}{b^2}\right)a^2b^2}$

$\dfrac{b^2-a^2b}{8ab^2+3a^2} = \dfrac{\frac{1\cdot a^2b^2}{a^2} - \frac{a^2b^2}{b}}{\frac{8a^2b^2}{a}+\frac{3a^2b^2}{b^2}}$

C

117 $\log_{1/4} X = -3$ (of, exponent, base)

$\Rightarrow \left(\frac{1}{4}\right)^{-3} = X$

$64 = X$

↑ B

#95

Martha : 2hrs

Brother : 3hrs

together = ?

$$\frac{1}{\text{time alone}}\left(\text{time together}\right) + \frac{1}{\text{time alone}}\left(\text{time together}\right) = 1 \quad \text{job well done}$$

$$\frac{1}{2}(x) + \frac{1}{3}x = 1$$

LCD: 6

$$6 \cdot \frac{x}{2} + 6 \cdot \frac{x}{3} = 6 \cdot 1$$

$$3x + 2x = 6$$

$$\frac{5x}{5} = \frac{6}{5}$$

$x = 6/5$ hr ← A

#115

$$3^x = \frac{1}{81}$$

$$\ln 3^x = \ln\left(\frac{1}{81}\right)$$

$$x \ln 3 = \ln\left(\frac{1}{81}\right)$$

$$\frac{x \ln 3}{\ln 3} = \frac{\ln\left(\frac{1}{81}\right)}{\ln 3}$$

$$x = \frac{\ln\left(\frac{1}{81}\right)}{\ln 3}$$

$$x = \boxed{-4} \leftarrow A$$

$$3^x = \frac{1}{3^4}$$

$$3^x = 3^{-4}$$

$$x = -4$$

#120

$$5\log_b t - \frac{2}{5}\log_b s + \frac{1}{2}\log_b v - 2\log_b u$$

$$\log_b t^5 - \log_b s^{2/5} + \log_b v^{1/2} - \log_b u^2$$

$$\boxed{\log_b \frac{t^5 v^{1/2}}{s^{2/5} u^2}} \leftarrow D$$

2. (x_1, y_1), (x_2, y_2)

Midpoint: $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

$(2, -2)$ and $(-1, 4)$

$$\left(\frac{2+-1}{2}, \frac{-2+4}{2}\right)$$

$$\left(\frac{1}{2}, \frac{2}{2}\right) = \left(\frac{1}{2}, 1\right)$$