

$$60/60 = 100$$

Foundations for College Algebra – MTWF
University of North Georgia
Fall 2017
Exam #2

Name: Key Date: _____

For full credit ALL work must be shown NEATLY on the exam. Ten points will be deducted off the top for “messy” work! Any “valid” checks are worth an additional point per question.

FOLLOW DIRECTIONS! Ask if you are not sure what is being asked!

Simplify the following.

$$\begin{aligned} 1.) \quad & \frac{1}{6} \div \frac{1}{6} + \frac{1}{6} - \frac{1}{6}(6) - \frac{1}{6} \\ & 1 + \frac{1}{6} - \frac{1}{6}(6) - \frac{1}{6} \\ & 1 + \frac{1}{6} - 1 - \frac{1}{6} \\ & \frac{7}{6} - 1 - \frac{1}{6} \\ & \frac{1}{6} - \frac{1}{6} = \boxed{0} \end{aligned}$$

$$\begin{aligned} 2.) \quad & \frac{1}{3} - \left(-\frac{5}{3}\right) \\ & \frac{1}{3} + \frac{5}{3} = \frac{6}{3} = \boxed{2} \end{aligned}$$

$$3.) \quad (3y^{-3})^{-2} = 3^{-2} y^6 = \frac{y^6}{3^2} = \boxed{\frac{y^6}{9}}$$

$$4.) \quad (3x^4 - 3x) - (3x - 3x^4) = 3x^4 - 3x - 3x + 3x^4$$

$$= \boxed{6x^4 - 6x}$$

Solve the following for the specified variable.

$$5.) \quad 5 = \sqrt{x+3}; \text{ for } x$$

$$25 = x + 3$$

$$\boxed{22 = x}$$

$$6.) \quad c = 5 + \frac{d}{h}; \text{ for } h$$

$$hc = h5 + d$$

$$hc - h5 = d$$

$$h(c-5) = d$$

$$\boxed{h = \frac{d}{c-5}}$$

$$c = 5 + \frac{\frac{ch}{h}}{\frac{d}{c-5}}$$

$$= 5 + \frac{d}{1} \cdot \frac{c-5}{d}$$

$$= 5 + c - 5$$

$$c = c \quad \checkmark$$

$$7.) \quad \frac{4}{m} + \frac{1}{2} = 8; \text{ for } m$$

$$2m \left(\frac{4}{m} + \frac{1}{2} = 8 \right)$$

$$8 + m = 16m$$

$$8 = 15m$$

$$\boxed{\frac{8}{15} = m}$$

$$8.) \quad \text{True or false: } -2^4 = 16$$

false

$$9.) \quad \text{What is the "output" given the following map: } g: t \rightarrow 4 - 5t - t^2 \text{ if } t = -3?$$

$$g: (-3) \rightarrow 4 - 5(-3) - (-3)^2$$

$$4 + 15 - 9$$

$$19 - 9$$

$$\boxed{10} \leftarrow \text{output}$$

10.) What is the slope of the following: $3x - 2y = 4$

Slope is $\frac{3}{2}$

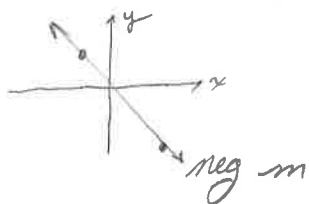
$$-2y = -3x + 4$$

$$y = \frac{-3}{-2}x + \frac{4}{-2}$$

$$= \boxed{\frac{3}{2}}x - 2$$

"m"

11.) Write the equation in *Standard Form* of the line that passes through the points $(-2, 5)$ and $(6, -8)$.



$$m = \frac{(-8) - (5)}{(6) - (-2)} = \frac{-13}{8}$$

$$5 = -\frac{13}{8}(-2) + b$$

$$5 = \frac{26}{8} + b$$

$$5 = \frac{13}{4} + b$$

$$\frac{5}{1} - \frac{13}{4} = b$$

$$\frac{20-13}{4} = b$$

$$\frac{7}{4} = b$$

$$y = -\frac{13}{8}x + \frac{7}{4}$$

$$8y = -13x + 14$$

$13x + 8y = 14$

Factor the following fully.

12.) $x^2 - 13x + 40$ $a \cdot c = 40$, $b = -13$ $\begin{array}{c} - \\ 8 \\ \hline 5 \end{array}$

$$x^2 - 8x - 5x + 40$$

$$x(x-8) - 5(x-8)$$

$(x-8)(x-5)$

13.) $2x^2 - 6x + 5x - 15$

$$2x(x-3) + 5(x-3)$$

$(x-3)(2x+5)$

14.) $9x^4 - 3x^3 + 18x^2 - 21$

$$3(3x^4 - x^3 + 6x^2 - 7)$$

15.) $3x^2 + 14x - 24$ $ac = -72, b = 14$

$$3x^2 + 18x - 4x - 24$$

$$3x(x+6) - 4(x+6)$$

$$(x+6)(3x-4)$$

+	-	x	+
-16	2	-32	✓
18	4	-72	✓

Bonus (5 points) Factor fully.

$24s^2 + 22s - 30$ $ac = -720, b = 22$

$$24s^2 + 40s - 18s - 30$$

$$8s(3s+5) - 6(3s+5)$$

$$(3s+5)(8s-6)$$

+	-	x	+
-25	3	-75	✓
-30	8	-240	✓
40	18	-720	✓

ck

$$24s^2 - 18s + 40s - 30$$

$$24s^2 + 22s - 30 ✓$$