FULL SAIL UNIVERSITY

Math Self-Evaluation

Admissions

Show all work clearly and circle answers.

1. *Simplify:*

a. $18 - 9 \times (-4) \div 3 + 10 \times 2$

b. $(3^2 - 2^2)^3 + 42 \div 6 \times 3^2 - 9$

c. $4^3 \div 2 - 2^3 \times 6 + 8(-1)^{10}$

2. *Evaluate:*

a. $\frac{-4b - 2}{4a} - \frac{3a - 1}{5b - 3}$ *for* $a = 4$, $b = 5$

b. $3x^2y - 2xy^2 + 10xy - 15y$ *for* $x = -5$, $y = 3$

3. *Simplify and combine like terms:*

a. $15x^2y - 4(-2xy^2 - 9xy) + 12xy^2 - 8xy - 9x$

b. $(8x - 5)(x^2 + 6x) - (9x + 2)(4x^2 - 3x)$

c. $(1 - x)^3$

4. *Solve for the given variable:*

a. $6y - 5 = -2y + 9$

b. $6(3n - 9) + 45 = 12 - 4(9 - 2n)$

c. $\frac{3x + 4}{x - 2} = \frac{5}{6}$

d. $8t - \frac{6t - 1}{2} = 5$

e. $\frac{4}{x} - \frac{x}{8} = 0$

5. *Identify the constants in the following terms:*

a. $-\frac{2a^3}{7}$ b. $\frac{4\pi r^3}{3}$ c. $\frac{-1}{5x}$

6. *Express the following using inverse notation:*

a. $\frac{1}{5x^3}$ b. $\frac{2}{n+1}$ c. $\frac{-1}{(4t-7)^2}$

7. *Simplify:*

a. $9^{-2} \times 6^2$ c. $(8x^7y^2)(2x^{-1}y^{-6})^3$

b. $-\frac{48a^{-4}b^6}{144a^5b^{-3}}$ d. $\left(\frac{3a^2b}{2ab^{-3}}\right)^3$

8. *Factor:*

a. $5x^2 - 80$

b. $a^2 - 7a + 12$

c. $18x^4y^2 + 21x^5y - 6x^3y^2$

9. *Solve for the given variables:*

a. $(5x + 8)(12 - 12x) = 0$

b. $3x^3 - 12x^2 - 96x = 0$

c. $\begin{cases} 8x - 7y = -9 \\ -3x + 4y = 2 \end{cases}$

10. *Simplify:*

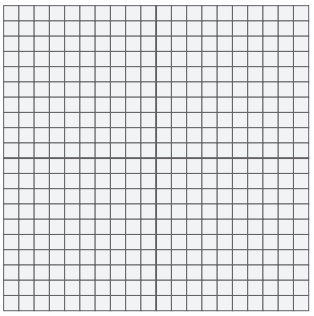
a. $\frac{-12t^7 + 18t^9}{-6t^3}$ c. $\sqrt{27a^3b^3} * \sqrt{3a^3b^9}$

b. $\frac{2x^2 - 4x}{2x^3 - 8x}$ d. $\frac{\sqrt{75a^8b}}{\sqrt{3a^4b^{-3}}}$

11. *Graph the given equations:*

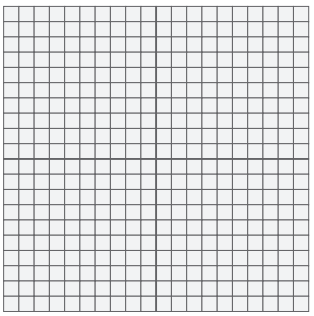
a. $y = (x + 3)^2 - 4$

x	y



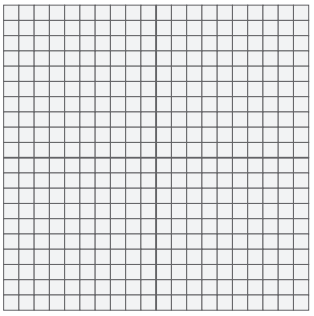
b. $\frac{y}{3} - \frac{x}{6} = -2$

x	y



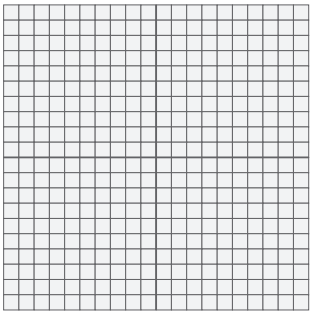
c $\frac{x-2}{3} - \frac{5}{2y-4} = 0$

x	y



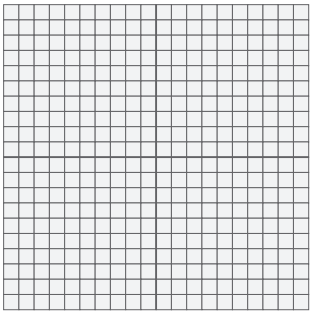
d. $y = x^3 + 3x^2 - 6x$

x	y



e. $y = \frac{8}{4 - x}$

x	y



12. *Evaluate the function:*

a. Find $f(-3)$ if $f(x) = \frac{3x^3}{2} + \frac{9}{2x^2} - 4x + \frac{x}{3}$

b. Find $f\left(\frac{\pi}{6}\right)$ if $f(x) = \frac{-5\cos(9x)}{2\sin(-x)}$

13. *Analytic geometry and trigonometry:*

a. Find the slope of the line going through the points (-7, 7) and (3, -5).

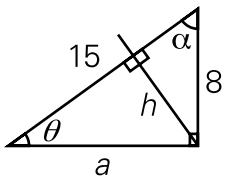
b. Using the point-slope formula, find the equation of the line going through the two previous points.

c. Find the distance between the points (-2, -5, 8) and (4, 0, -3).

d. Simplify: $\left(\frac{3\tan(315°) + 6\sin(90°)}{-2\cos(60°)}\right)$

e. Simplify: $\frac{\sin(x)}{\tan(x)} + \cos(x)\tan(x)$

f. Solve the following right triangle:



a = ____

h = ____

θ = ____

α = ____