

Math 195 Quiz 1

January 28, 2019

Name: _____

Instructions: No calculators. Use your own scrap. Write your fully simplified answers in the space provided.

1. Evaluate each expression without a calculator.

(a) $(-3)^4 =$ _____ (b) $-3^4 =$ _____ (c) $3^{-4} =$ _____

(d) $\frac{5^{23}}{5^{21}} =$ _____ (e) $\left(\frac{2}{3}\right)^{-2} =$ _____ (f) $16^{-3/4} =$ _____

2. Expand and simplify.

(a) $(x + 3)(4x - 5) =$ _____ (b) $(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b}) =$ _____

(c) $(2x + 3)^2 =$ _____

3. Factor each expression.

(a) $4x^2 - 25 =$ _____ (b) $2x^2 + 5x - 12 =$ _____

(c) $x^3 - 3x^2 - 4x + 12 =$ _____ (d) $x^3y - 4xy =$ _____

4. Simplify the rational expression.

(a) $\frac{x^2+3x+2}{x^2-x-2} =$ _____ (b) $\frac{x^2}{x^2-4} - \frac{x+1}{x+2} =$ _____

(c) $\frac{\frac{y}{1} \frac{x}{1}}{\frac{x}{y} \frac{y}{x}} =$ _____

5. Rationalize the expression and simplify.

(a) $\frac{\sqrt{10}}{\sqrt{5}-2} =$ _____ (b) $\frac{\sqrt{4+h}-2}{h} =$ _____

6. Solve the equations for all real solutions.

(a) $\frac{2x}{x+1} = \frac{2x-1}{x}$ $x =$ _____ (b) $x^2 - x - 12 = 0$ $x =$ _____

(c) $2x^2 + 4x + 1 = 0$ $x =$ _____ (d) $3|x - 4| = 10$ $x =$ _____

7. Solve each inequality. Write your answer in interval notation.

(a) $x(x - 1)(x + 2) > 0$ $x \in$ _____ (b) $|x - 4| < 3$ $x \in$ _____

8. Find an equation for the line that passes through the point $(2, -5)$ and
- (a) has slope -3 _____ (b) is parallel to the x -axis _____
- (c) is parallel to the y -axis _____ (d) is parallel to $2x - 4y = 3$ _____

9. If $f(x) = x^3$, find and simplify $\frac{f(2+h)-f(2)}{h} =$ _____

10. Find the domain of the following functions. Write in interval notation.

(a) $f(x) = \frac{2x+1}{x^2+x-2}$ $D:$ _____ (b) $g(x) = \frac{\sqrt[3]{x}}{x^2+1}$ $D:$ _____

11. If $f(x) = x^2 + 2x - 1$ and $g(x) = 2x - 3$, find:

(a) $f \circ g$ _____ (b) $g \circ f$ _____

12. Find the exact values.

(a) $\tan \frac{\pi}{3} =$ _____ (b) $\sin \left(\frac{7\pi}{6} \right) =$ _____ (c) $\sec \frac{5\pi}{3} =$ _____

13. Find all values of x such that $\sin 2x = \sin x$ for $0 \leq x \leq 2\pi$. $x =$ _____

14. Sketch the graphs of the given functions.

(a) $y = x^2$

(b) $y = x^3$

(c) $y = 4 - x^2$

(c) $y = \sqrt{x}$

(e) $y = \frac{1}{x}$

(f) $2x + 3y = 6$