

# Precalc review

Name \_\_\_\_\_

1. Evaluate each expression without using a calculator

a)  $\left(\frac{2}{3}\right)^{-2}$

b)  $16^{-3/4}$

2. Simplify

$$\left(\frac{2x^{3/2}y^3}{x^2y^{-1/2}}\right)^{-2}$$

3. Expand and simplify

a)

$$(x + 3)(4x - 5)$$

b)

$$(\sqrt{a} - \sqrt{b})(\sqrt{a} + \sqrt{b})$$

4. Factor the expression

a)

$$2x^2 + 5x - 12$$

b)

$$4x^2 - 25$$

5. Simplify

a)

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

b)

$$\frac{x^2}{x^2 - 4} - \frac{x + 1}{x + 2}$$

6. Rationalize the denominator (or numerator) and simplify

a)

$$\frac{\sqrt{10}}{\sqrt{5} - 2}$$

b)

$$\frac{\sqrt{4+h} - 2}{h}$$

7. Find an equation of the line that contains the points  $(-3,2)$  and  $(1,1)$ .

8. If  $f(x) = x^3$ , evaluate the difference quotient  $\frac{f(2+h) - f(2)}{h}$  and simplify your answer.

9. Find the domain of the function

a)

$$\frac{\sqrt[3]{x}}{x^2 + 1}$$

b)

$$\sqrt{4-x} + \sqrt{x^2-1}$$

10. Simplify

$$\frac{1}{\sqrt[5]{x^2}}x^2$$

11. Are the following statements true?

a)  $\sqrt{x^2 + y^2} = x + y$

b)  $(a + b)^{-1} = a^{-1} + b^{-1}$

c)  $\frac{1}{a + b} = \frac{1}{a} + \frac{1}{b}$