

Calculus I - Review Problems

Name:

Math 251.01 (02), Calculus I, Spring 2014

1. Evaluate the following without a calculator.

(a) $16^{-3/4}$

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

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

3. Expand and simplify $(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b})$

4. Factor each expression

(a) $4x^2 - 25$

(b) $2x^2 + 5x - 12$

5. Simplify the rational expression

(a) $\frac{(x-1)}{\sqrt{x}-1}$

(b) $\frac{\frac{y}{1} - \frac{x}{1}}{\frac{y}{x} - \frac{x}{y}}$

6. Rationalize and simplify the expression $\frac{\sqrt{4+h}-2}{h}$

7. State whether each of the following expressions is true or false

(a) $(p+q)^2 = p^2 + q^2$

(b) $\sqrt{ab} = \sqrt{a}\sqrt{b}$

(c) $\sqrt{a^2 + b^2} = a + b$

(d) $\frac{1}{x-y} = \frac{1}{x} - \frac{1}{y}$

8. Find the equation of a line that passes through $(2, -5)$ and has

(a) has slope -3

(b) is parallel to the x -axis.

(c) Is parallel to the line $2x - 4y = 3$

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