

You are **NOT** to use a calculator on this part of the exam.

1. (a) Evaluate each of the following. For any that do not exist, write DNE.

$$(-5)^2 = \underline{\hspace{2cm}} \quad -2^3 = \underline{\hspace{2cm}} \quad \left(\frac{2}{3}\right)^2 = \underline{\hspace{2cm}} \quad -2^4 = \underline{\hspace{2cm}}$$

- (b) Evaluate each expression. Circle or box your answers.

$$8 - 5(4 + 1) \qquad 5x^2 + 3x - 1 \quad \text{for } x = -2$$

- (f) Evaluate each of the following. For any that do not exist, write DNE.

$$3^{-1} = \underline{\hspace{2cm}} \quad (-5)^{-2} = \underline{\hspace{2cm}} \quad (5)^0 = \underline{\hspace{2cm}} \quad \left(\frac{3}{5}\right)^{-2} = \underline{\hspace{2cm}}$$

4. (a) Evaluate each of the following. For any that do not exist, write DNE.

$$\sqrt{-16} = \underline{\hspace{2cm}} \quad -\sqrt{-16} = \underline{\hspace{2cm}} \quad \sqrt[3]{\frac{27}{8}} = \underline{\hspace{2cm}} \quad \sqrt[3]{-1} = \underline{\hspace{2cm}}$$

You **MAY** use a calculator for this part of the exam. Circle or box your answers when a blank is not provided.

1. (c) Evaluate $\frac{1 - (0.043)(5)}{0.006}$. Round to the hundredth's place.

(d) Simplify $(x - 7) + [3x - (x + 2)]$

- (e) Simplify the expressions. Give your answers without negative exponents.

$$(2xy^5)^3 \qquad (4x)(3x^7) \qquad \frac{x^5}{x^9}$$

2. (a) Determine whether $x = -2$ is a solution to $\frac{8}{x} + x^3 = 5x + 2$. To receive credit, you must show correct work supporting your answer. Circle one of the following.

Yes, it is a solution.

No, it is not a solution.

- (b) Solve each equation.

$$-\frac{1}{3}x + 2 = \frac{5}{2} \qquad 5 = 7 - 2(3x - 1) + 4x$$

(c) Simplify $(-2a^2 + 4a - 5) - (-3a^2 - a - 9)$

- (d) Multiply and simplify each of the following.

$$(3x + 5)(3x - 5) \qquad (2x - 3)(x^2 - 5x + 1) \qquad (x - 4)^2$$

(e) Factor each expression completely.

$$5x^3 - 5x$$

$$4x^2 + 12x + 9$$

(f) Solve each equation **showing clearly how you do it**.

$$4x^2 + 24 = 20x$$

$$16x^2 = 9$$

$$\frac{1}{5}y^2 - 2 = -\frac{3}{10}y$$

$$(x + 1)^2 = 3x + 7$$

3. (a) Give any value or values that x is not allowed to have in the expression:

$$\frac{x^2 - 3x - 10}{x^2 - 4} \quad x \neq \underline{\hspace{2cm}}$$

(b) Simplify the expression from the previous exercise.

(c) Multiply $\frac{x^2 - 2x - 3}{x - 4} \cdot \frac{x - 4}{x - 3}$

(d) Solve each equation, **showing clearly how it is done**.

$$\frac{5}{2x} = \frac{2}{x} - \frac{1}{12}$$

$$\frac{3}{y - 4} - \frac{2}{y + 1} = \frac{5}{y^2 - 3y - 4}$$

4. (b) Simplify $\sqrt{20}$

(c) Multiply $(3 - 2\sqrt{5})(2 + \sqrt{3})$

(d) Solve $x^2 - 4x + 2 = 0$ using the quadratic formula. **Show your work and give your answer as two separate numbers. Give your answers as exact values, not decimals.**

(e) Solve each equation, **showing clearly how you do it**.

$$t - 1 = \sqrt{t + 11}$$

$$\sqrt{5x - 1} + 3 = 7$$