

Problems of the Week # 10

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Circle the one best answer. Justify your answer by showing all work below.

46. Solve this equation:  $5 + 3x(x - 2) = 4$ .

- A.  $\frac{3 \pm \sqrt{6}}{3}$       B.  $\pm\sqrt{24}$       C.  $1 \pm 2\sqrt{6}$       D.  $\frac{3 \pm 2\sqrt{3}}{3}$       E.  $-1 \pm \frac{1}{3}\sqrt{6}$

47. Find the quotient and remainder when  $2x^3 - 3 - 6x$  is divided by  $4 + 2x$ .

- A. Quotient:  $x^2 - 5x$  ; remainder:  $-31$       B. Quotient:  $x^2 - 2x + 1$  ; remainder:  $1$   
C. Quotient:  $x^2 - 3x$  ; remainder:  $17x$       D. Quotient:  $x^2 - 2x + 1$  ; remainder:  $-7$   
E. Quotient:  $x^2 - 5x$  ; remainder:  $25$

48. Rationalize the denominator and simplify:  $\frac{3 - \sqrt{5}}{3 + \sqrt{5}}$

- A.  $\frac{7 - 3\sqrt{5}}{2}$       B.  $\frac{3 - 5\sqrt{5}}{14}$       C.  $\frac{2}{7}$       D.  $\frac{3\sqrt{5} - 5}{3\sqrt{5} + 5}$       E.  $1$

49. Determine the equation for the inverse function of  $y = (x + 2)^3 - 8$ .

- A.  $y = -(x + 2)^3 + 8$       B.  $y = \sqrt[3]{x - 2} + 8$   
C.  $y = \sqrt[3]{x} + 6$       D.  $y = \sqrt[3]{x + 10}$   
E.  $y = \sqrt[3]{x + 8} - 2$

50. Solve this system of equations for  $y$ : 
$$\begin{cases} 10x + 3y = 8 \\ y = -2x + 2 \end{cases}$$

- A.  $-1$       B.  $-\frac{1}{2}$       C.  $\frac{1}{2}$       D.  $1$       E. no solution

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