**Dividing Polynomials Quiz**

*Melanie Bellido Puna is reviewing answers for this assessment.*

Points scored may differ from the grading guidelines because of teacher review. Contact your program teacher if you have any questions.

✅ Correct  ✅ Partial Credit  ❌ Incorrect

**Multiple Choice**

1. Classify $3x^5 - 8x^3 - 2x^2 + 5$ by number of terms. *(1 point)*
   - (0 pts) trinomial
   - (1 pt) polynomial of 4 terms
   - (0 pts) binomial
   - (0 pts) polynomial of 5 terms

   1 /1 point

Consider the leading term of the polynomial function. What is the end behavior of the graph?

*4x^5 + 1x*

2. *(1 point)*
   - (0 pts) Since $n$ is odd and $a$ is positive, the end behavior is up and down.
   - (1 pt) Since $n$ is odd and $a$ is positive, the end behavior is down and up.
   - (0 pts) Since $n$ is odd and $a$ is positive, the end behavior is down and down.
   - (0 pts) Since $n$ is odd and $a$ is positive, the end behavior is up and up.

   1 /1 point

3. What is the graph of $y = \frac{1}{4}x^3$ *(1 point)*

![Graph of $y = \frac{1}{4}x^3$](image)
4. Use synthetic division to find $P(3)$ for $P(x) = x^4 - 6x^3 - 4x^2 - 6x - 2$. (1 point)

- (0 pts) 3
- (1 pt) -137
- (0 pts) 299
- (0 pts) -47

5. What is a cubic polynomial function in standard form with zeros 1, -2, and 2? (1 point)

- (0 pts) $f(x) = x^3 + x^2 - 3x + 4$
- (0 pts) $f(x) = x^3 + x^2 - 4x - 2$
- (0 pts) $f(x) = x^3 + x^2 + 4x + 4$
- (1 pt) $f(x) = x^3 - x^2 - 4x + 4$

6. Which points are the best approximations of the relative maximum and minimum of the function?

$f(x) = x^3 + 6x^2 - 36x$

(1 point)

- (1 pt) The relative maximum is about (-6, 216) and the relative minimum is about (2, -40).
- (0 pts) The relative maximum is about (-6, 40) and the relative minimum is about (2, -216).
- (0 pts) The relative maximum is about (6, 216) and the relative minimum is about (-2, -40).
- (0 pts) The relative maximum is about (6, 40) and the relative minimum is about (-2, -216).

7. Find the real solutions of the equation by graphing.
\[ x^2 - x + 2 = 0 \text{ (1 point)} \]

\[ x = 1 \]

\[ x = 3 \]
8. Over two summers, Ray saved $800.00 and $600.00. The polynomial \( P(x) \) represents his savings at the beginning of the third year, where \( x \) is the growth factor. (The interest rate \( r \) is \( x - 1 \).) What is the interest rate he needs to save $1,650.00 after the third summer?

\[
800x^2 + 600x \quad (1 \text{ point})
\]

- C (0 pts) 0.1%
- (1 pt) 10.9%
- C (0 pts) -285.9%
- C (0 pts) 1.1%

1/1 point

9. Divide \( 3x^3 + 3x^2 + 2x - 2 \) by \( x + 3 \) using long division. \( (1 \text{ point}) \)

C (0 pts) \( 3x^2 - 6x + 20 \)
11. Miguel is designing shipping boxes that are rectangular prisms. The shape of one box, with height $h$ in feet, has a volume defined by the function $V(h) = h(h - 5)(h - 6)$. Graph the function. What is the maximum volume for the domain $0 < h < 6$? Round to the nearest cubic foot. (1 point)

- $0$ pts 29 ft$^3$
- $0$ pts 27 ft$^3$
- $1$ pt 24 ft$^3$
- $0$ pts 6 ft$^3$

1 / 1 point

12. **Work Pad**

Note: Remember to show all of the steps that you use to solve the problem. You can use the comments field to explain your work. Your teacher will review each step of your response to ensure you receive proper credit for your answer.

Write the polynomial in factored form.

$x^3 - 3x^2 - 10x$

(2 points)
13. What are the real or imaginary solutions of the polynomial equation?

$$27x^3 + 125 = 0 \ (2 \text{ points})$$
1 /2 points  what about the complex answers?

14. Use the Remainder Theorem to find the remainder when \( P(x) = x^4 - 9x^3 - 5x^2 - 3x + 4 \) is divided by \( x + 3 \). (2 points)
Essay

Note: Your teacher will grade your response to ensure you receive proper credit for your answer.

15. Suppose the polynomial function below represents the power generated by a wind turbine, where $x$ represents the wind speed in meters per second and $y$ represents the kilowatts generated. Interpret $f(10)$.

$$f(x) = 0.08x^3 + x^2 + x + 0.26$$

(2 points)

Essay:
Well To find \( f(10) \), I substituted 10 for \( x \) so
\[
\begin{align*}
  f(10) &= 0.08 \times 10^3 + 10^2 + 0.26 \\
  &= 80 + 100 + 10 + 0.26 \\
  &\text{and got 190.26} \triangleleft \triangleleft \\
\end{align*}
\]

2 /2 points

The final score is 17/19 (89.5%).

Close