417Honors Algebra 2
Mid-Chapter 6 Test Review

Name: Key
Period: _____ Date: _____

SHOW ALL WORK NEATLY & IN AN ORDERLY MANNER!!!

Simplify:

1) $-128x^{14}y^4$ $(4x^3y)^3(-2x^5y)$ $(64x^9y^3)$

2) $-\frac{1}{2y^2}$ $\left(\frac{2x^3y^4}{-x^3y^2}\right)^{-1}$ ADD

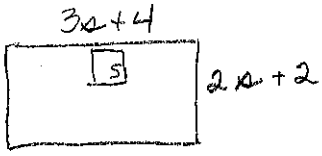
3) $-\frac{28}{z^6}$ $-(4w^{-3}z^{-6})(7w^3)$ $\frac{-4 \cdot 7w^3}{w^3 z^6}$

4) $-20w^2+6w-5$ $(6w - 13w^2) - (5 + 7w^2)$

5) $w^3-5w^2t+10wt^2-8t^3$ $(w - 2t)(w^2 - 3wt + 4t^2)$

$w^3 - 3w^2t + 4wt^2$
$-2w^2t + 6wt^2 - 8t^3$

6) $5s^2+14s+8$ A rectangular deck is built around a square pool. The pool has side length "s". The length of the deck is 4units longer than three times the side length of the pool. The width of the deck is 2 units longer than twice the side length of the pool. What is the area of the deck in terms of s? Express your answer as a polynomial in standard form.




$(3s+4)(2s+2) - s^2$
$6s^2 + 6s$
$+8s + 8$

7) $4j - 3k$ $\frac{(12j^2k - 9jk^2)}{3jk} \div \frac{(3jk)}{3jk}$

8) $\frac{x}{2}+\frac{1}{4}+\frac{2}{x}$ $\frac{(4x^3 + 2x^2 + 16x)}{8x^2} \div \frac{8x^2}{8x^2}$

9) $x^2-2x-5-\frac{10}{2x-5}$ Use Polynomial long-division: $(2x^3 - 9x^2 + 15) \div (2x - 5)$

$x^2 - 2x - 5 - \frac{10}{2x-5}$
$2x-5\overline{)2x^3-9x^2+0x+15}$
$+-2x^3+5x^2$
$-4x^2+0x$
$++4x^2+10x$
$-10x+15$
$++10x-25$
$-10$

10) $2x^2-5x+6-\frac{1}{x-4}$ Use Synthetic division: $(2x^3 - 13x^2 + 26x - 25)(x - 4)^{-1}$

$4\,|\,2\ -13\ 26\ -25$
$\quad\quad\ 8\ -20\ 24$
$\quad 2\ -5\ 6\ -1$

11) 34 If $p(x) = 3x^2 - 2x + 1$, find $p(-3)$.

$3(-3)^2 - 2(-3) + 1$
$27 + 6 + 1$

12) $4y^4 - 2$ If $c(x) = 2x^2 - 4x + 3$, find $2c(y^2 + 1)$.

$2\left[2(y^2+1)^2 - 4(y^2+1) + 3\right]$

$2\left[2(y^4+2y^2+1) - 4y^2 - 4 + 3\right]$

$2\left[2y^4 + 4y^2 + 2 - 4y^2 - 1\right]$

$2\left[2y^4 - 1\right]$

Graph each polynomial function on your calculator & provide the requested information.

13) $f(x) = x^3 + 3x^2 - 4x$

$-2.5$ x-coordinate of the relative maximum (round to nearest tenth)

{all ℝ #'s} Domain

{all ℝ #'s} Range

$f(x) \to -\infty$ as $x \to -\infty$
$f(x) \to +\infty$ as $x \to +\infty$ End behavior (in f(x) → notation)

14) $g(x) = x^3 - 4x^2 - 2x + 3$

$(2.9, -12.1)$ relative minimum (round to nearest tenth)

{all ℝ #'s} Domain

{all ℝ #'s} Range

$f(x) \to -\infty$ as $x \to -\infty$
$f(x) \to +\infty$ as $x \to +\infty$ End behavior (in f(x) → notation)

15) Between $-2$ & $-1$; $-1$ & $0$; $0$ & $1$; $2$ & $3$

Determine the consecutive values of x between each real zero is located for the polynomial function whose table of points is shown below.

| X | Y1 |
|---|---|
| -2 | 9 |
| -1 | -1 |
| 0 | 1 |
| 1 | -3 |
| 2 | -7 |
| 3 | 19 |
| 4 | 129 |

Press + for Δ Tbl

State the intervals over which each function is increasing/decreasing.

16) $x^3 + 3x^2 - 6x - 6$


Inc: $x < -2.7$
$x > .7$

Dec: $-2.7 < x < .7$

17) $-2x^4 + 5x^3 - 4x^2 + 3x + 7$

Round to 10th as nec.


Inc: $x < 1.3$

Dec: $x > 1.3$