✐ Test 3 (Lessons 5–6): Dividing Polynomials

Simplify.

1) $\left(3x^5y^3 + 15x^4y^2 - 21x^3y\right)\left(3x^2y\right)^{-1}$

2) $2x+3\overline{)10x^2+27x+18}$

3) Divide $\left(x^4 - 32\right)$ by $(x-1)$.

4) $\dfrac{5a^3c - 12a^2c^2 + 8ac - 16}{4ac}$

5) Simplify using long division.

$$\left(4x^4 - 3x^3 + 2x^2 - x + 5\right)(x+1)^{-1}$$

6) Simplify using synthetic division.

$$\left(24x^4 + 15x^3 - 7x^2 + x - 5\right) \div (x+1)$$

7) Use synthetic substitution to find the value of n when
$P(-2) = -9$ for $P(x) = 2x^3 + 5x^2 + nx - 7$.

8) Use synthetic substitution to determine if $p(-2)$ is a factor of $x^4 + 8x^3 - 23x - 6$
Explain.

9) Power P is the product of voltage E and current I, $P = EI$. The power was measured to be $\left(a^3 + 10a^2 + 28a + 15\right)$ and the current is $(a + 5)$. Determine the voltage.

10) A polynomial is divided by a binomial and the remainder is zero. What does this tell you about the relationship between the polynomial and binomial expressions?