

Given a polynomial divisor and dividend, use long division to find the quotient and remainder.

1. $(18x^3 - 3x^2 + x - 1) \div (x^2 - 4)$

2. $(6x^4 + x^3 - 9x + 13) \div (x^2 + 8)$

3. $(x^3 + 25x^2 + 100x) \div (x + 20)$

Given a polynomial $p(x)$, use synthetic division to divide by $x - a$ and obtain the quotient and the (nonzero) remainder.

4. $(7x^3 - 4x^2 - 400x - 100) \div (x - 8)$

5. $(2.5x^3 + 6x^2 - 5.5x - 10) \div (x + 1)$

6. $(3x^3 - 11x^2 - 56x - 50) \div (x + 4)$

7. Given that the height of a rectangular prism is $x + 2$ and the volume is $x^3 - x^2 - 6x$, write an expression that represents the area of the top face of the prism.

8. Explain the error: Two students used synthetic division to divide $3x^3 - 2x - 8$ by $x - 2$. Determine which solution is correct. Find the error in the other solution.

A.	B.
$\begin{array}{r rrrr} 2 & 3 & 0 & -2 & -8 \\ & & 6 & 12 & 20 \\ \hline & 3 & 6 & 10 & 12 \end{array}$	$\begin{array}{r rrrr} 2 & 3 & 0 & -2 & -8 \\ & & -6 & 12 & -20 \\ \hline & 3 & -6 & 10 & -28 \end{array}$

Review

Graph the function $f(x) = \begin{cases} (x + 2)^2, & x < 0 \\ -1, & x > 0 \end{cases}$

