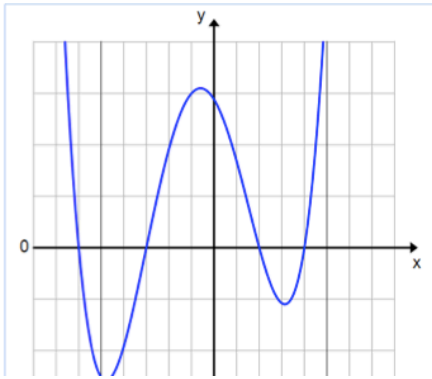


Portfolio Work: Extended Problem #1

Consider the polynomial $P(x) = x^4 + 3x^3 - 28x^2 - 36x + 144$.

- Is 1 a zero of the polynomial P? Show how you know:
- Is $x + 3$ one of the factors of P? Explain how you know:
- The graph of P is shown below. What are the zeros of P?



Write the equation of P in factored form:

Portfolio Work: Extended Problem #2

Rewrite the expression $(4x^2 + 5x)^2 - 5(4x^2 + 5x) - 6$ as a product of four linear factors (this means that none of the factors should have an exponent greater than 1)

Portfolio Work: Extended Problem #3

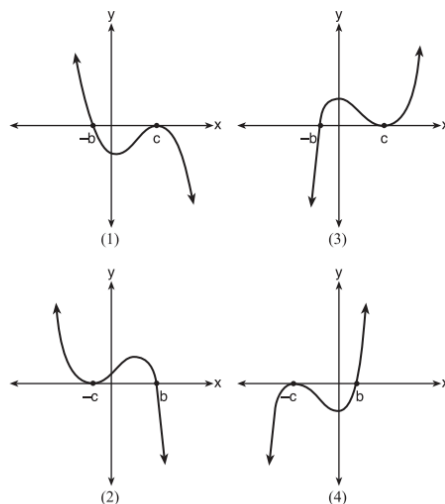
Suppose $f(x) = 3x^3 - 8x^2 - 20x + 16$, and $x + 2$ is a factor of $f(x)$.

a) Perform synthetic division on the polynomial to find the result of dividing $f(x)$ by $x + 2$

b) Does the polynomial have any other zeros? Find all possible zeros and show work:

Portfolio Work: Extended Problem #4

If a , b , and c are all positive real numbers, which graph could represent the sketch of the graph of $p(x) = -a(x + b)(x^2 - 2cx + c^2)$?



SHOW in detail why your answer is correct. This could include any algebraic work, numbers that you used, or calculations with the calculator, but **MUST** include some form of written description to back up your work: