NO CALCULATORS ALLOWED
SHOW PROPER WORK & SIMPLIFY ALL ANSWERS
PUT A BOX AROUND EACH FINAL ANSWER

Let $f(x) = -3x^2 + 24x - 11$.

SCORE: _____ / 4 PTS

[a] Write the function in vertex form (also known as "standard form" in your textbook).

$f(x) = -3(x^2 - 8x + 16) - 11 + 48$

$= -3(x-4)^2 + 37$

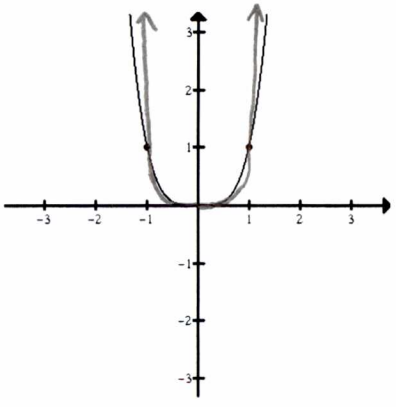
[b] What is the equation of the axis of symmetry of the graph ?

$x = 4$

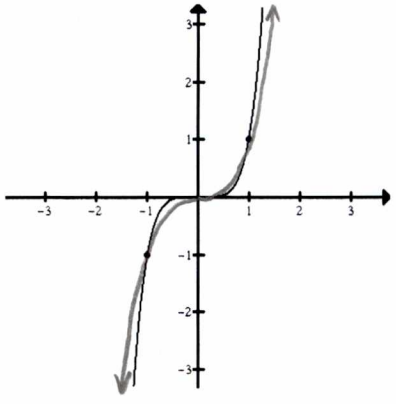
Sketch the graphs.

SCORE: _____ / 2 PTS

[a] The graph of $f(x) = x^4$ is shown below.
Sketch the graph of $g(x) = x^6$ on the same axes.

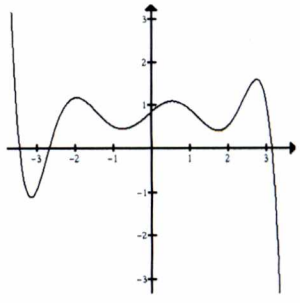


[b] The graph of $f(x) = x^7$ is shown below.
Sketch the graph of $g(x) = x^5$ on the same axes.



Consider the polynomial function whose graph is shown on the right.

SCORE: _____ / 2 PTS



[a] What is the minimum degree of the function ?

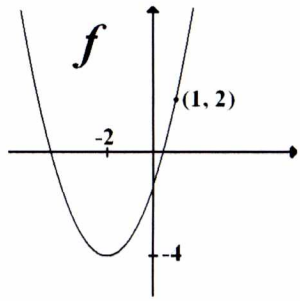
6 MAX/MIN $\Rightarrow$ DEGREE ≥ 7

[b] Is the leading coefficient positive or negative ?

NEGATIVE

Write an equation for the quadratic function f whose graph is shown on the right.

SCORE: _____ / 4 PTS



$f(x) = a(x+2)^2 - 4$

$f(1) = a(1+2)^2 - 4 = 2$

$9a - 4 = 2$

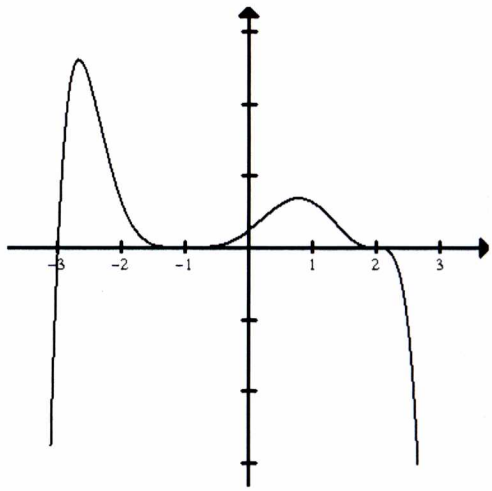
$9a = 6$

$a = \frac{2}{3}$

$f(x) = \frac{2}{3}(x+2)^2 - 4$

Find a possible equation for the polynomial function whose graph is shown on the right.
NOTE: The degree of the polynomial is at least 5.

SCORE: _____ / 4 PTS



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

Sketch the graph of $f(x) = x^3(x-4)^2(x+2)$.

SCORE: _____ / 4 PTS