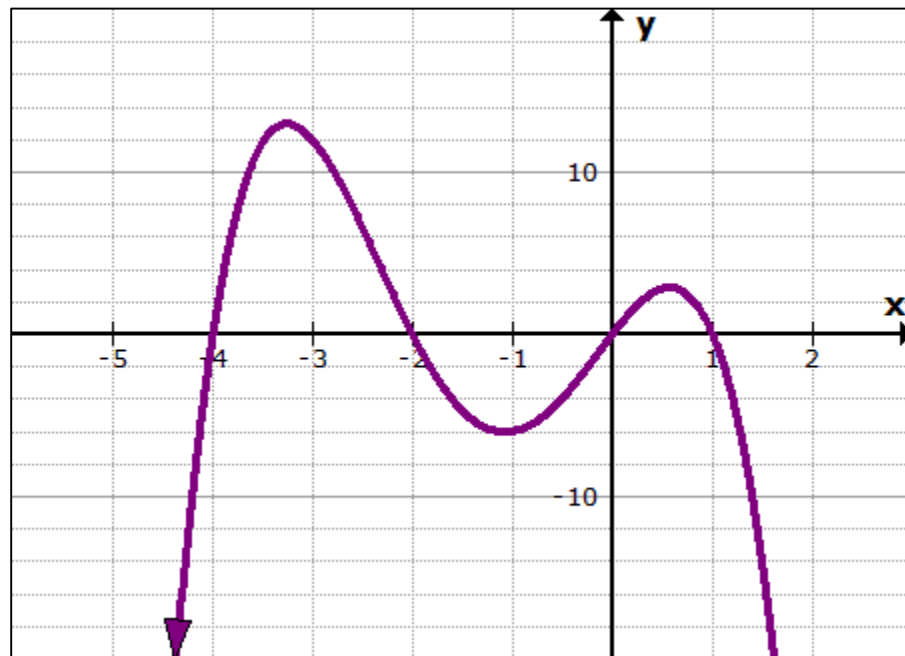


MHF4U j1+ B – Polynomial Functions Mid-Unit Assignment

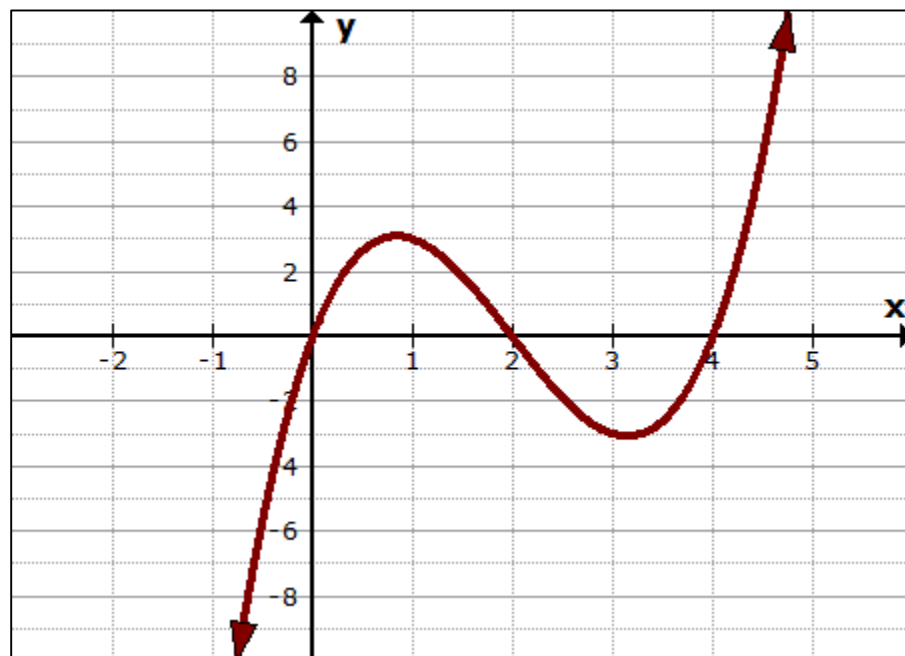
Answer all questions with full solutions. Make sure your work is legible, even after you have scanned it, and submit it as a single file.

1. Perform the following polynomial divisions using long/synthetic division: **(4 marks)**
 - a. $2x^3 - 5x^2 + 17x + 10$ divided by $(2x+1)$
 - b. $x^4 + x^3 + 3x - 4$ divided by $(x-1)$
2. Find the equation of the curve that joins the following points. Hint: Use common differences. **(4 marks)**
 - a. The zeros of the function are -3, 1 and 5. The y intercept is 15. Find the function.
 - b. $(1,1)$, $(0,1)$, $(2,-5)$, $(-1,-5)$
3. Complete the following: **(5 marks)**
 - a. For the function $f(x) = \frac{2x^2+1}{3x}$, find the slope of the secant line to the curve between each of the given intervals.
 - i. $x = 1$ to $x = 2$
 - ii. $x = 1$ to $x = 1.5$
 - iii. $x = 1$ to $x = 1.1$
 - iv. $x = 1$ to $x = 1.01$
 - b. Extend this information to determine the slope of the tangent to the function in a., at $x = 1$.
4. Use the given zeroes to determine an equation for each function, in expanded form: **(6 marks)**

a.



b.



GO TO: THE DROPBOX AND UPLOAD YOUR WORK.

5. Given the function $f(x) = \frac{1}{2}x^3 - 2x^2 - 3x + 11$: **(6 marks)**
- Graph the function.
 - Determine the domain and range.
 - Determine any zeros (approximate to one decimal place if necessary).
 - Determine the y intercept if it exists.
6. Determine the x and y intercepts and then graph $y = f(x)$. **(4 marks)**
- $y = \frac{8}{x} - x$
 - $y = \frac{(x^2 - 16)}{(x^2 + 4x)}$
7. Using the functions in question 6, determine the domain, range and any asymptotes or holes (if they exist). **(4 marks)**