Exam 2 review

MAT 201, Spring 2017

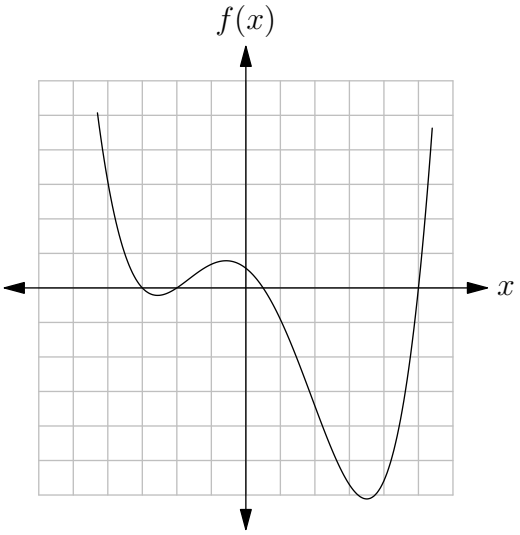
In addition to the worksheets discussed on D2L, you should review the following questions.

Use the definition of the derivative to find the derivatives of three kinds of functions.

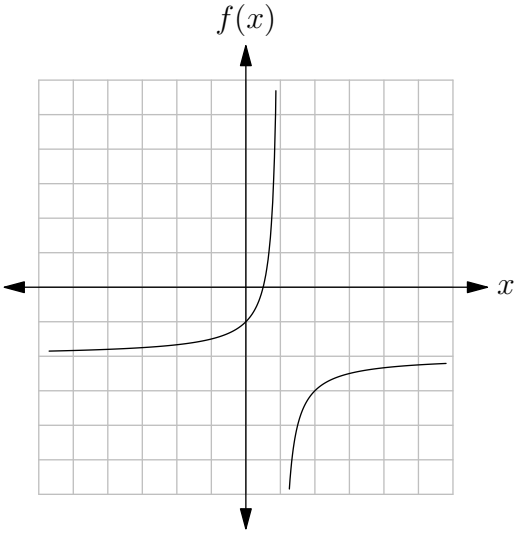
1. Polynomial: $f(x) = 5 - 2x^2$
2. Square root: $g(x) = \sqrt{2x + 3}$
3. Rational: $h(x) = \dfrac{1}{x - 1}$

Sketch the derivative of each graph shown below.

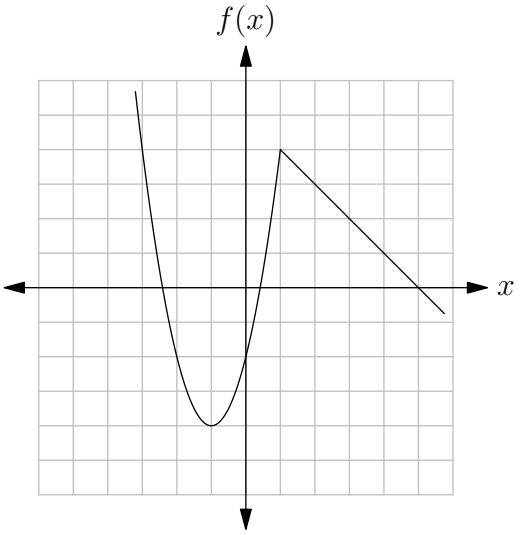
4.



5.



6.



7. A group of engineers is observing an experimental aircraft. After t seconds, the height (in feet) of the aircraft above the ground is given by the function

$$h(t) = -5t^3 + 30t^2 - 45t.$$

(a) How high is the aircraft when the observations begin (at time $t = 0$)?

(b) Give functions $v(t)$ and $a(t)$ that describe the velocity and acceleration of the aircraft at time t.

(c) When does the aircraft hit the ground? What is its velocity when this happens?

(d) Find the maximum height of the aircraft.

(e) Find the time when the aircraft experiences no acceleration.