Practice – 1

Once you feel confident with acceleration, complete problems 1 and 2. Check your answers by going to the Solutions tab in Moodle.

Instructions: Answer each of the following practice questions on a separate piece of paper. Step by step solutions are provided under the Solutions tab. You will learn the material more thoroughly if you complete the questions before checking the answers.

1. The velocity functions of a moving particle are given. Find the acceleration for the given times.

   a. $v(t) = 2t - 3t^2$ when $t = 4$

   b. $v(t) = (t + 3)^2$ when $t = 3$

2. An object is moving in a straight line. The displacement, in metres, from a fixed point is given by the function $s(t) = t^2 - 5t + 4$, where $t \geq 0$, and t is in seconds.

   a. Determine the velocity and the acceleration of the object at any time t.

   b. Determine the turning points of the object.

   c. Sketch the graph of the function $y = s(t)$.

   d. Describe the motion at $t = 1$, $t = \dfrac{5}{2}$, and $t = 3$.

   e. Sketch the graph of velocity $v(t)$ verses time t, and describe the velocity.

   f. Sketch the graph of acceleration $a(t)$ versus time t, and describe the acceleration.