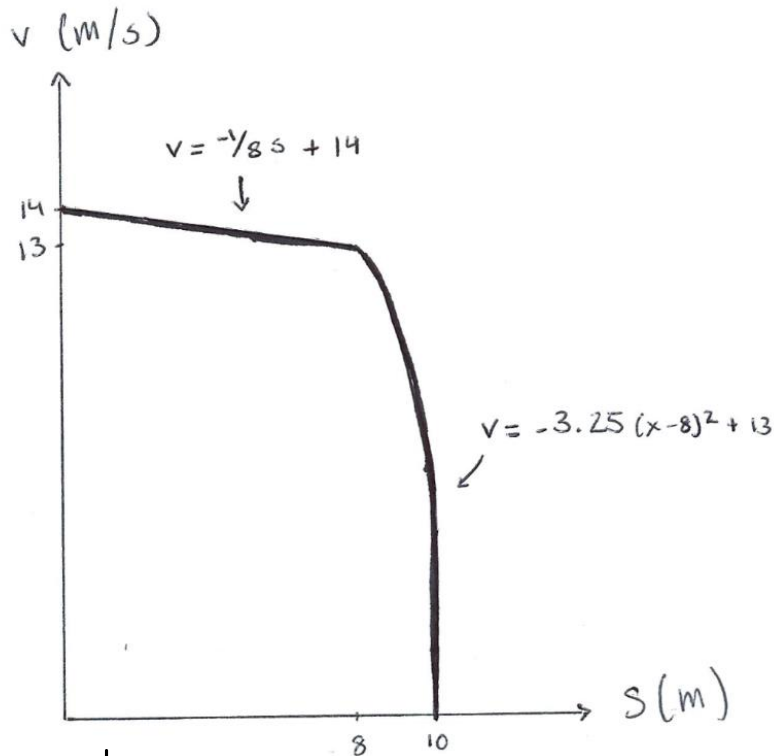


20-P-KM-AF-006

A plane starts from rest and travels in a straight line motion as shown by the graph below. Create an $a-s$ graph and find the values of acceleration at $s = 3, 5$ and 9 m to three decimal points.



$$a ds = v dv$$

$$a = v \frac{dv}{ds}$$

$$v_1 = -\frac{1}{8}s + 14$$

$$\frac{dv_1}{ds} = -\frac{1}{8} \Rightarrow a_1 = \frac{1}{64}s - \frac{7}{4}$$

$$v_2 = -\frac{13}{4}(s-8)^2 + 13$$

$$\frac{dv_2}{ds} = -\frac{13}{2}(s-8) \Rightarrow a_2 = \frac{169}{8}(s-8)^3 - \frac{169}{2}(s-8)$$

$$a(3) = \frac{3}{64} - \frac{7}{4} = -1.7 \text{ m/s}^2$$

$$a(5) = \frac{5}{64} - \frac{7}{4} = -1.67 \text{ m/s}^2$$

$$a(9) = \frac{169}{8} - \frac{169}{2} = -63.375 \text{ m/s}^2$$