

Answers to Week 12

• **Section 5.5**

1. 300 x 600 ft.
2. $\sqrt[3]{2V} \times \sqrt[3]{2V} \times \frac{V}{\sqrt[3]{4V^2}}$
3. $\frac{2\pi RH}{9}$
4. $\frac{23}{\sqrt{29}}$
5. $\sqrt{180}$ ft
6. 45°

• **Section 5.7**

1. .
 - (a) $f(x) = \frac{1}{2}x^2 - \frac{4}{5}x^{5/4} + 10x + C$
 - (b) $f(x) = 2x^{1/2} + \frac{2}{3}x^{3/2} - \frac{8}{3}$
 - (c) $f(x) = e^x - \ln|x| - e$
 - (d) $f(x) = \frac{1}{2}x^2 - 2\sin x + \cos x + 3x + 2$
 - (e) $f(x) = \frac{2}{3}x^{3/2} + x^{1/2} + 3\sin^{-1}x + C$
2. $\mathbf{r}(t) = t\mathbf{i} + \left(\frac{5}{2}t^2 - t\right)\mathbf{j}$; speed = $\sqrt{1 + (5t - 1)^2}$

• **Section 6.1**

1. 55
2. $40 - \left(\frac{2^{19} - 1}{2^{19}}\right)$
3. $\frac{28}{3}$