

1. (a) $\frac{3}{5}x^5 - \ln|x| + 5 \sin x + C$
(b) $\frac{1}{12} \tan^6(2x) + C$
2. (a) $\pi/2$
(b) $\frac{5}{36}$
3. y is increasing when $x > 1/2$.
4. (a) $v(2) = 20$, $v(4) = 40$, and $v(10) = 40$
(b) $v(t) = \begin{cases} 10t & \text{if } 0 \leq t \leq 4, \\ 40 & \text{if } t > 4. \end{cases}$
(c) 320
5. (8 points) $c = 2 + \sqrt{3}$