Problem Set 78

2a. $v(t) = t^2 - 10$

$x(t) = \frac{1}{3}t^3 - 10t + 4$

b. $v(2) = -6 \text{ units/sec}$

$x(2) = -\frac{40}{3} \text{ units}$

4. 1,200,000 joules

6. False. The statement is true only if f is continuous at $x = 5$.

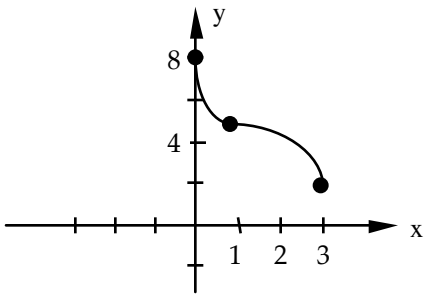
8. $\frac{1}{4}e^{2x}(2x - 1) + C$

10. $2\ln(x^2 + 1) + C$

12. $\frac{1}{7}\sin^7 x - \frac{1}{9}\sin^9 x + C$

14. $\int_0^4 \sqrt{y}\, dy$

16.



Absolute maximum: (0, 8)
Absolute minimum: (3, 2)
Inflection point: (1, 5)

18. symmetric about the y-axis

20. $\frac{2}{\sqrt{1 - 4x^2}} + \arcsin(2x) + C$

22. $f(x) = x^4 - 5x^2 - 12x - 8$

24. A