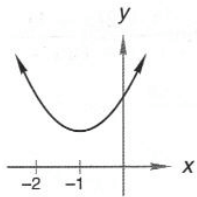


Calculus — Problem Set 45

2. B and D

4.



f attains a local minimum at $x = -1$.

6.
$$\frac{dy}{dx} = \frac{-2x}{(x^2 + 1)^2}$$

8. 3

10. 2.0523 units²

12. $y' = -\csc^2 x$

14. a) $x = -2, -1$



Local max: $\left(-2, \frac{4}{3}\right)$

Local min: $\left(-1, \frac{7}{6}\right)$

16.
$$\frac{dy}{dx} = -\frac{3}{2}x^2(x^3 + 5)^{3/2}$$

18. $s'(t) = v_0 + gt$

20. $4\ln|u| - \frac{3}{14}u^{-14} + C$

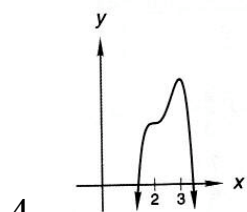
22. Domain:
 $\{x \in \mathbb{R} \mid |x| \geq 1\}$

Range:
 $\{y \in \mathbb{R} \mid y \geq 0\}$

24. 530

Calculus — Problem Set 46

2.
$$\frac{dh}{dt} = -\frac{2\sqrt{21} m}{21 s}$$



4.

6. $x(x^2 + 1)^{-1/2}$

8. $\frac{1}{2}$

10. $\frac{81}{4}$ units²

12. $y' = 2 + \ln x^2$

14.
$$\frac{dy}{dx} = e^{\sin x} \cos x$$

16. a) $x = -2, 0, 1$



Local max: (0,5)

Local min: (-2,-27), (1,0)

18.

$$\frac{1}{2}t^2 + \ln|t| - 3t + \frac{1}{6}t^6 - \frac{1}{4}t^{-4} + \cos t + C$$

20. $-2 \cos 2 \approx 0.8323$

22. a) 218.3934
 $f'(2) = e^4$

b) $g'(2) = 4$
 $f(2) \cdot g'(2) \approx 218.3926$

c) They are approximately the same.

24. a) 0

b) 0