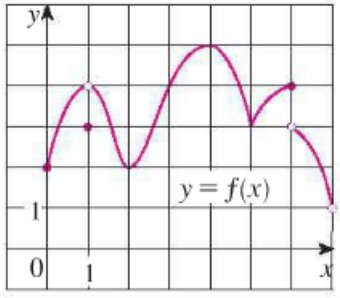
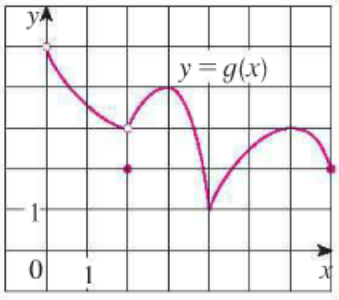
#s 1, 2: State absolute and local maxima and minima of the function, from its graph. Report these as ordered pairs, (x, y).

1. 

2. 

3. Sketch the graph of a function f that is continuous on $[1,5]$ and has…an absolute maximum at $x = 5$, an absolute minimum at $x = 2$, a local maximum at $x = 3$, and local minima at $x = 2$ and $x = 4$.

#s 4 - 10: Sketch the graph of f by hand and use your sketch to find the absolute and local maximum and minimum values of f. Graphs of basic functions and transforming them (Stretches and shifts) were discussed in Sections 1.2 and 1.3. The better these college algebra graphing skills are, the easier all your graphing will be. And in calculus, we have techniques for finding maxima and minima that are beyond college algebra.

4. $f(x) = \frac{1}{2}(3x-1),\ x \le 3$

5. $f(x) = \frac{1}{x},\ x \ge 1.$

6. $f(x) = \sin(x),\ 0 \le x \le \frac{\pi}{2}$

7. $f(x) = \sin(x),\ -\frac{\pi}{2} \le x \le \frac{\pi}{2}$

8. $f(x) = (x+1)^2 + 1,\ 2 \le x < 5$

9. $f(x) = -\sqrt{x} + 1$

10. $f(x) = \begin{cases} -x+1 & \text{if } 0 \le x < 2 \\ 2x-4 & \text{if } 2 \le x \le 3 \end{cases}$

#s 11 – 14: Find the critical numbers of the function, i.e., x-values where $f(x) \exists$ and $(f'(x) = 0$ or $f'(x) \nexists)$.

11. $f(x) = -\frac{1}{2}x^2 + \frac{1}{3}x + 4$

12. $f(x) = 2x^3 - 3x^2 - 36x$

13. $g(y) = \frac{y-1}{y^2 - y + 1}$

14. $f(\theta) = 2\cos\theta + \sin^2\theta$

#s 15, 16 : Find the absolute maximum and minimum values of f on the given interval. Report these as ordered pairs.

15. $f(x) = 2x^3 - 3x^2 - 12x + 1$ on $[-2,3]$

16. $f(t) = t\sqrt{4 - t^2}$ on $[-1,2]$