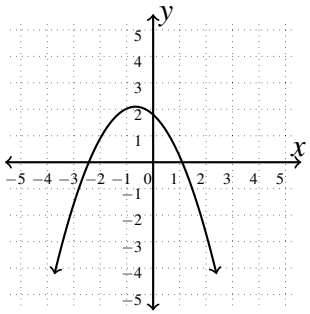
1. $\frac{1}{31}\begin{bmatrix} 1 & -5 \\ 7 & -4 \end{bmatrix} = \begin{bmatrix} \frac{1}{31} & \frac{-5}{31} \\ \frac{7}{31} & \frac{-4}{31} \end{bmatrix}$

2. $6x^2 - 14x - 6$

3. 

4. (a) $\frac{xx'}{4y} = \frac{4 \cdot 2}{4 \cdot 2}$
   (b) $\sqrt{20}$
   (c) $\frac{2xx' + 2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{20}} \cdot 20$

5. $\begin{cases} t-6 & \text{when } t \geq 6 \\ -(t-6) & \text{when } t < 6 \end{cases}, -5$

6. $\frac{5}{1} = 5$

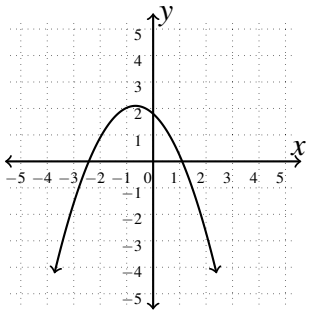
7. (a) $\sqrt{x^2+6} + \sqrt{4x+2}$
   (b) $\frac{0}{2\sqrt{10}}$

8. $(x^{x^3+3\cos(x)})\left((3x^2 - 3\sin(x))\ln(x) + \frac{x^3+3\cos(x)}{x}\right)$

1. $\frac{1}{1}\begin{bmatrix} 2 & -9 \\ 1 & -4 \end{bmatrix} = \begin{bmatrix} 2 & -9 \\ 1 & -4 \end{bmatrix}$

2. $18x^2 - 16x - 2$

3.



4. (a) $-\frac{xx'}{4y} = -\frac{3\cdot 4}{4\cdot -1}$
   (b) $\sqrt{10}$
   (c) $\frac{2xx'+2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{10}} \cdot 18$

5. $\begin{cases} -(6-t) & \text{when } t \geq 6 \\ 6-t & \text{when } t < 6 \end{cases}, 2$

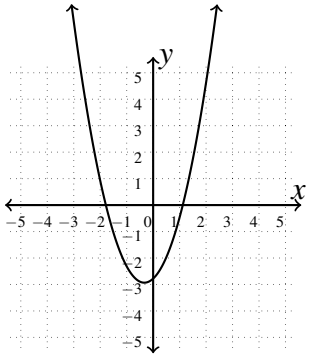
6. $\frac{2}{3} = \frac{2}{3}$

7. (a) $\sqrt{x^2+5} + \sqrt{5x+1}$
   (b) $\frac{-3}{2\sqrt{6}}$

8. $(x^{e^{2x}-2\sin(x)})\left((2e^{2x} - 2\cos(x))\ln(x) + \frac{e^{2x}-2\sin(x)}{x}\right)$

1. $\frac{1}{47}\begin{bmatrix} 3 & -7 \\ 5 & 4 \end{bmatrix} = \begin{bmatrix} \frac{3}{47} & \frac{-7}{47} \\ \frac{5}{47} & \frac{4}{47} \end{bmatrix}$

2. $6x^2 - 12x - 9$

3. 

4. (a) $\frac{xx'}{1y} = \frac{1 \cdot 5}{1 \cdot -2}$
   (b) $\sqrt{5}$
   (c) $\frac{2xx' + 2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{5}} \cdot 20$

5. $\begin{cases} t-4 & \text{when } t \geq 4 \\ -(t-4) & \text{when } t < 4 \end{cases}, -6$

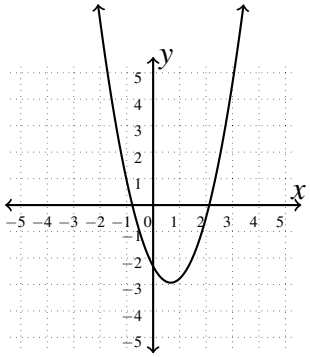
6. $\frac{5}{7} = \frac{5}{7}$

7. (a) $\sqrt{x^2+24} + \sqrt{10x-1}$
   (b) $\frac{0}{2\sqrt{49}}$

8. $(x^{x^4 - 2\cos(x)})\left((4x^3 + 2\sin(x))\ln(x) + \frac{x^4 - 2\cos(x)}{x}\right)$

1. $\frac{1}{63}\begin{bmatrix} 3 & -9 \\ 5 & 6 \end{bmatrix} = \begin{bmatrix} \frac{1}{21} & \frac{-1}{7} \\ \frac{5}{63} & \frac{2}{21} \end{bmatrix}$

2. $12x^2 - 16x - 9$

3. 

4. (a) $-\frac{xx'}{2y} = -\frac{1\cdot 4}{2\cdot -2}$
   (b) $\sqrt{5}$
   (c) $\frac{2xx'+2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{5}} \cdot 4$

5. $\begin{cases} -(7-t) & \text{when } t \geq 7 \\ 7-t & \text{when } t < 7 \end{cases}, -4$

6. $\frac{4}{3} = \frac{4}{3}$

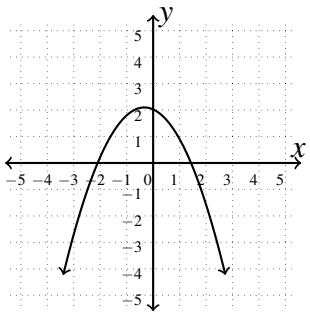
7. (a) $\sqrt{x^2+4} + \sqrt{6x-1}$
   (b) $\frac{-4}{2\sqrt{5}}$

8. $(x^{e^{2x}-4\cos(x)})\left((2e^{2x}+4\sin(x))\ln(x) + \frac{e^{2x}-4\cos(x)}{x}\right)$

1. $\frac{1}{3}\begin{bmatrix} 1 & -3 \\ 3 & -6 \end{bmatrix} = \begin{bmatrix} \frac{1}{3} & -1 \\ 1 & -2 \end{bmatrix}$

2. $15x^2 - 8x - 5$

3.



4. (a) $-\frac{xx'}{2y} = -\frac{3\cdot 5}{2\cdot 1}$
   (b) $\sqrt{10}$
   (c) $\frac{2xx'+2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{10}} \cdot 15$

5. $\begin{cases} t-4 & \text{when } t \geq 4 \\ -(t-4) & \text{when } t < 4 \end{cases}, \frac{1}{2}$

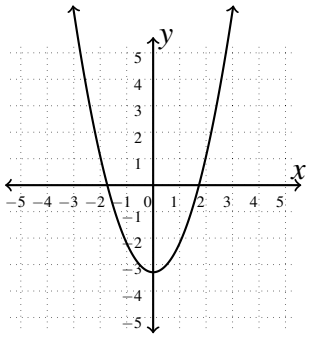
6. $\frac{6}{2} = 3$

7. (a) $\sqrt{x^2+8} + \sqrt{7x-2}$
   (b) $\frac{-3}{2\sqrt{12}}$

8. $(x^{x^3+3\cos(x)})\left((3x^2 - 3\sin(x))\ln(x) + \frac{x^3+3\cos(x)}{x}\right)$

1. $\frac{1}{31}\begin{bmatrix} 4 & -5 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} \frac{4}{31} & \frac{-5}{31} \\ \frac{3}{31} & \frac{4}{31} \end{bmatrix}$

2. $15x^2 - 10x - 2$

3. 

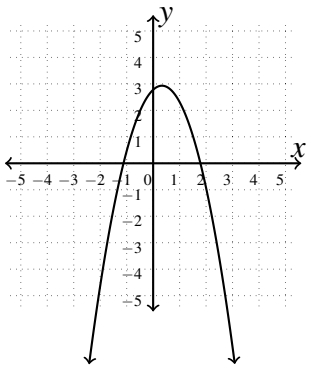
4. (a) $-\frac{x'y}{x} = -\frac{2\cdot 2}{4}$
   (b) $\sqrt{20}$
   (c) $\frac{2xx'+2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{20}} \cdot 12$

5. $\begin{cases} t-2 & \text{when } t \geq 2 \\ -(t-2) & \text{when } t < 2 \end{cases}, -\frac{1}{6}$

6. $\frac{2}{6} = \frac{1}{3}$

7. (a) $\sqrt{x^2+14} + \sqrt{8x-2}$
   (b) $\frac{0}{2\sqrt{30}}$

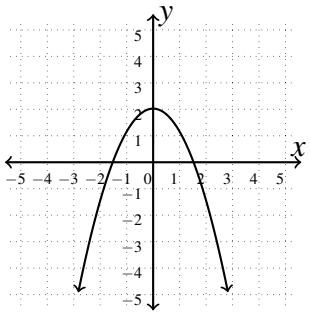
8. $(x^{e^{2x}-3\cos(x)})\left((2e^{2x}+3\sin(x))\ln(x) + \frac{e^{2x}-3\cos(x)}{x}\right)$

1. $\frac{1}{45}\begin{bmatrix} 3 & -9 \\ 7 & -6 \end{bmatrix} = \begin{bmatrix} \frac{1}{15} & \frac{-1}{5} \\ \frac{7}{45} & \frac{-2}{15} \end{bmatrix}$
2. $18x^2 - 18x - 3$
3. 

4. (a) $\frac{xx'}{2y} = \frac{4\cdot 3}{2\cdot 2}$
   (b) $\sqrt{20}$
   (c) $\frac{2xx'+2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{20}} \cdot 36$
5. $\begin{cases} -(2-t) & \text{when } t \geq 2 \\ 2-t & \text{when } t < 2 \end{cases}, -4$
6. $\frac{-1}{5} = \frac{-1}{5}$
7. (a) $\sqrt{x^2+14} + \sqrt{7x+2}$
   (b) $\frac{-1}{2\sqrt{23}}$
8. $(x^{e^{2x}+2\cos(x)})\left((2e^{2x} - 2\sin(x))\ln(x) + \frac{e^{2x}+2\cos(x)}{x}\right)$

1. $\frac{1}{29}\begin{bmatrix} 1 & -7 \\ 5 & -6 \end{bmatrix} = \begin{bmatrix} \frac{1}{29} & \frac{-7}{29} \\ \frac{5}{29} & \frac{-6}{29} \end{bmatrix}$

2. $9x^2 - 6x - 6$

3. 

4. (a) $\frac{xx'}{1y} = \frac{3\cdot 5}{1\cdot 2}$
   (b) $\sqrt{13}$
   (c) $\frac{2xx'+2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{13}} \cdot 60$

5. $\begin{cases} -(6-t) & \text{when } t \geq 6 \\ 6-t & \text{when } t < 6 \end{cases}, -\frac{1}{2}$

6. $\frac{7}{5} = \frac{7}{5}$

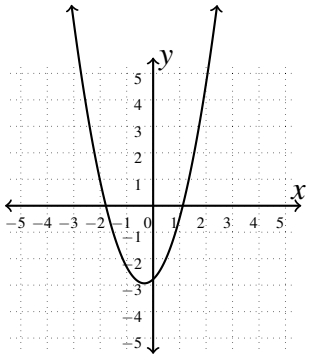
7. (a) $\sqrt{x^2+7} + \sqrt{6x-1}$
   (b) $\frac{-2}{2\sqrt{11}}$

8. $(x^{e^{3x}+3\sin(x)})\left((3e^{3x}+3\cos(x))\ln(x) + \frac{e^{3x}+3\sin(x)}{x}\right)$

1. $\frac{1}{27}\begin{bmatrix} 4 & -5 \\ 7 & -2 \end{bmatrix} = \begin{bmatrix} \frac{4}{27} & \frac{-5}{27} \\ \frac{7}{27} & \frac{-2}{27} \end{bmatrix}$

2. $6x^2 - 16x - 3$

3.



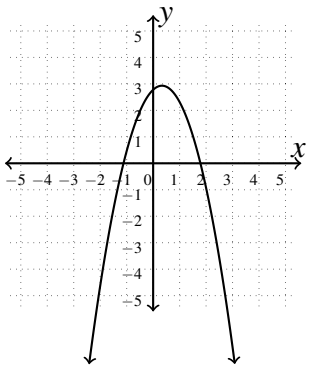
4. (a) $-\frac{xx'}{3y} = -\frac{4\cdot 2}{3\cdot 1}$
   (b) $\sqrt{17}$
   (c) $\frac{2xx'+2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{17}} \cdot \frac{32}{3}$

5. $\begin{cases} -(2-t) & \text{when } t \geq 2 \\ 2-t & \text{when } t < 2 \end{cases}$, $\frac{1}{6}$

6. $\frac{6}{-2} = -3$

7. (a) $\sqrt{x^2+21} + \sqrt{9x+1}$
   (b) $\frac{-1}{2\sqrt{37}}$

8. $(x^{x^4+3\cos(x)})\left((4x^3 - 3\sin(x))\ln(x) + \frac{x^4+3\cos(x)}{x}\right)$

1. $\frac{1}{79}\begin{bmatrix} 4 & -9 \\ 7 & 4 \end{bmatrix} = \begin{bmatrix} \frac{4}{79} & \frac{-9}{79} \\ \frac{7}{79} & \frac{4}{79} \end{bmatrix}$
2. $9x^2 - 6x - 10$
3. 

4. (a) $\frac{xx'}{1y} = \frac{1 \cdot 3}{1 \cdot -2}$
   (b) $\sqrt{5}$
   (c) $\frac{2xx' + 2yy'}{2\sqrt{x^2+y^2}} = \frac{1}{2\sqrt{5}} \cdot 12$
5. $\begin{cases} t-6 & \text{when } t \geq 6 \\ -(t-6) & \text{when } t < 6 \end{cases}$, $\frac{1}{3}$
6. $\frac{2}{4} = \frac{1}{2}$
7. (a) $\sqrt{x^2+5} + \sqrt{4x+2}$
   (b) $\frac{-2}{2\sqrt{6}}$
8. $(x^{x^4+2\sin(x)})\left((4x^3+2\cos(x))\ln(x) + \frac{x^4+2\sin(x)}{x}\right)$