The Ugly

Perform the indicated operation and simplify: $\dfrac{2x+3}{x-\sqrt{2}} - \dfrac{x^2+1}{3}$.

Now, $\dfrac{2x+3}{x-\sqrt{2}} - \dfrac{x^2+1}{3} = \dfrac{3(2x+3)}{3(x-\sqrt{2})} - \dfrac{(x^2+1)(x-\sqrt{2})}{3(x-\sqrt{2})}$.

Thus it is clear that, $\dfrac{2x+3}{x-\sqrt{2}} - \dfrac{x^2+1}{3} = \dfrac{3(2x+3)-(x^2+1)(x-\sqrt{2})}{3(x-\sqrt{2})}$.

So that, $\dfrac{2x+3}{x-\sqrt{2}} - \dfrac{x^2+1}{3} = \dfrac{6x+9-(x^3-(\sqrt{2})x^2+x-\sqrt{2})}{3(x-\sqrt{2})}$.

Hence, $\dfrac{2x+3}{x-\sqrt{2}} - \dfrac{x^2+1}{3} = \dfrac{6x+9-x^3+(\sqrt{2})x^2-x+\sqrt{2})}{3(x-\sqrt{2})}$.

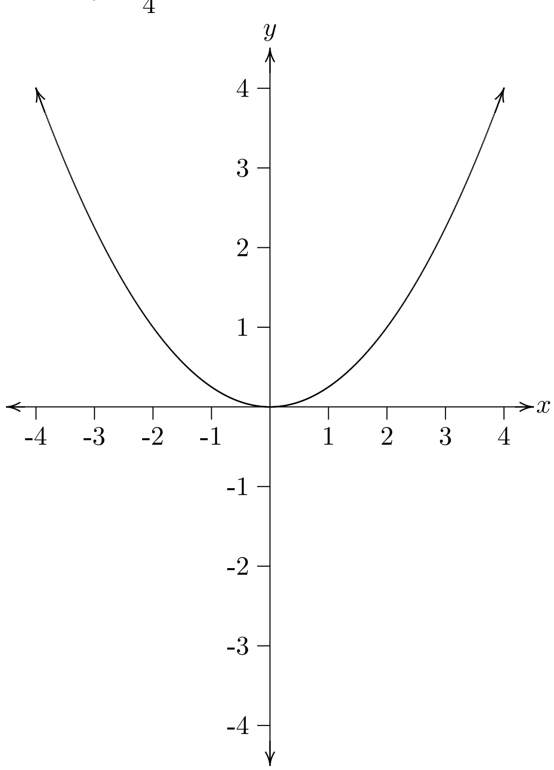
And finally, $\dfrac{2x+3}{x-\sqrt{2}} - \dfrac{x^2+1}{3} = \dfrac{-x^3+(\sqrt{2})x^2+5x+(9+\sqrt{2})}{3(x-\sqrt{2})}$.

Comments:

- While the statements are all true, the redundancy of the material on the left side of the equal signs is distracting at best.
- Note that the equal signs do not line up.

See **"The Good."**

Graph $y = \dfrac{1}{4}x^2$.



While the graph is technically correct,

- The arrows on the negative ends of the axes are distracting and unnecessary.
- The arrows on the ends of the function curve are distracting and unnecessary.
- Too much labeling of the tick marks: Our eyes are drawn to them rather than the graph of the function.
- The scales on the x- and y-axes do not agree: In this case they should!
- The negative y-axis is much too long since the functional values are all positive.

See **"The Good."**