

Name: KEY

Section 2.2 – Arithmetic Combinations of Functions

Given: $f(x) = 3x + 5$ and $g(x) = x^2 - 7x + 8$

Find:

| | |
|--|---|
| <p style="text-align: center;">$(f + g)(x)$</p> <p>$f(x) + g(x)$</p> <p>$3x + 5 + x^2 - 7x + 8$</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $x^2 - 4x + 13$ </div> | <p style="text-align: center;">$(g - f)(x)$</p> <p>$x^2 - 7x + 8 - (3x + 5)$</p> <p>$x^2 - 7x + 8 - 3x - 5$</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $x^2 - 10x + 3$ </div> |
| <p>$\left(\frac{f}{g}\right)(x)$; Identify Domain Restrictions</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $\frac{3x + 5}{x^2 - 7x + 8}$ </div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $x \neq \frac{7 \pm \sqrt{17}}{2}$ </div> | <p style="text-align: center;">$(fg)(x)$</p> <p>$(3x + 5)(x^2 - 7x + 8)$</p> <p>$3x^3 + 5x^2 - 21x^2 - 35x + 24x + 40$</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $3x^3 - 16x^2 - 11x + 40$ </div> |

Hard to factor
use Quad Eq

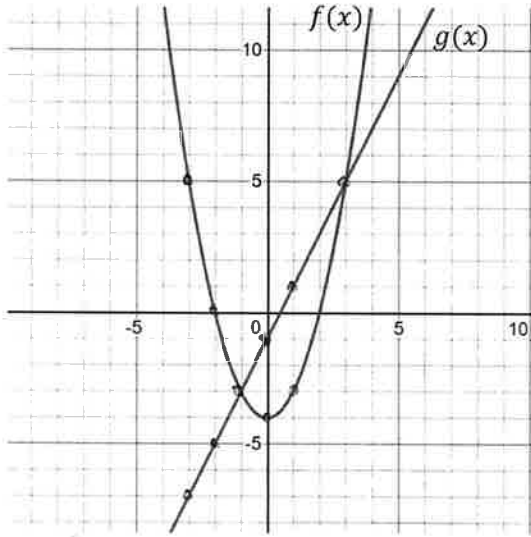
$$-b \pm \sqrt{b^2 - 4ac}$$

$$\frac{7 \pm \sqrt{49 - 4(1)(8)}}{2}$$

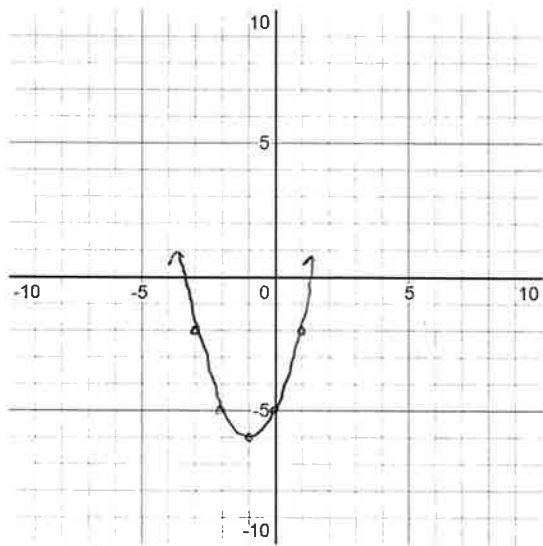
$$\frac{7 \pm \sqrt{49 - 32}}{2}$$

$$x = \frac{7 \pm \sqrt{17}}{2}$$

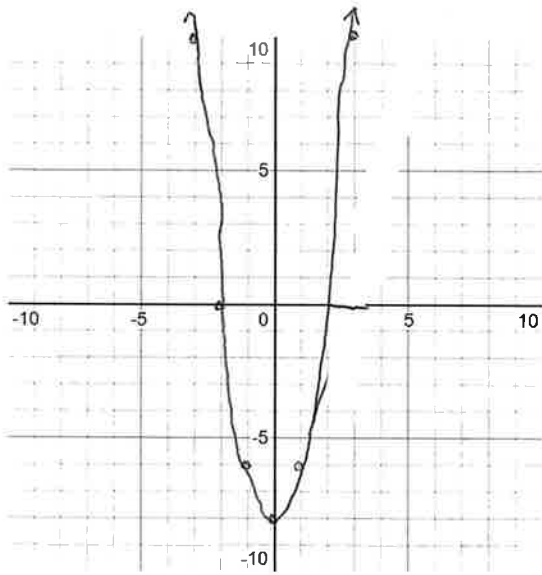
Given the Functions:



Graph: $(f + g)(x)$



Graph: $(f + f)(x)$



Graph: $(g + g)(x)$

