

Calcul d'images.

1) Pour $x \in \mathbb{R}$ $f(x) = -x + 8x$

Calculer $f(-2)$ et $f(\frac{2}{3})$

• $f(-2) = -(-2) + 8 \times (-2) = 2 - 16 = \boxed{-14}$

• $f(\frac{2}{3}) = -\frac{2}{3} + 8 \times \frac{2}{3} = -\frac{2}{3} + \frac{16}{3} = \boxed{\frac{14}{3}}$

2) Pour $x \in \mathbb{R}$ $f(x) = \frac{x}{5} - x^2$

Calculer $f(-3)$ et $f(\frac{2}{5})$

• $f(-3) = \frac{-3}{5} - (-3)^2 = -\frac{3}{5} - 9 = -\frac{3}{5} - \frac{45}{5} = \boxed{-\frac{48}{5}}$

• $f(\frac{2}{5}) = \frac{\frac{2}{5}}{5} - (\frac{2}{5})^2$
 $= \frac{2}{5} \times \frac{1}{5} - \frac{4}{25} = \frac{2}{25} - \frac{4}{25} = \boxed{-\frac{2}{25}}$

3) Pour $x \in \mathbb{R}$ $f(x) = -(1-x)^2$

Calculer $f(-4)$ et $f(\frac{2}{3})$

• $f(-4) = -(1-(-4))^2 = -(1+4)^2 = -5^2 = \boxed{-25}$

• $f(\frac{2}{3}) = -(1-\frac{2}{3})^2 = -(\frac{1}{3})^2 = \boxed{-\frac{1}{9}}$

4) Pour $x \in \mathbb{R}, x \neq 2$ $f(x) = \frac{3-x^2}{2-x}$

Calculer $f(-4)$ et $f(\frac{5}{3})$

• $f(-4) = \frac{3-(-4)^2}{2-(-4)} = \frac{3-16}{2+4} = \frac{-13}{6} = \boxed{-\frac{13}{6}}$

• $f(\frac{5}{3}) = \frac{3-(\frac{5}{3})^2}{2-\frac{5}{3}} = \frac{3-\frac{25}{9}}{\frac{6}{3}-\frac{5}{3}} = \frac{\frac{27}{9}-\frac{25}{9}}{\frac{1}{3}}$
 $= \frac{\frac{2}{9}}{\frac{1}{3}} = \frac{2}{9} \times \frac{3}{1} = \frac{2 \times 3}{3 \times 1} = \boxed{\frac{2}{3}}$

5) Pour $x \in \mathbb{R}, x \neq -\frac{1}{7}$ $f(x) = \frac{3-4x}{7x+1}$

Calculer $f(-3)$ et $f(\frac{1}{2})$

• $f(-3) = \frac{3-4 \times (-3)}{7 \times (-3)+1} = \frac{3+12}{-21+1} = \frac{15}{-20} = -\frac{5 \times 3}{5 \times 4} = \boxed{-\frac{3}{4}}$

6) Pour $x \in \mathbb{R}$, $f(x) = -\frac{3}{5}(x-1)^2$

Calculer $f(-4)$ et $f(\frac{1}{6})$

• $f(-4) = -\frac{3}{5}(-4-1)^2 = -\frac{3}{5}(-5)^2 = -\frac{3}{5} \times 25$
 $= -\frac{3 \times 5 \times 5}{5} = \boxed{-15}$

• $f(\frac{1}{6}) = -\frac{3}{5}(\frac{1}{6}-1)^2$
 $= -\frac{3}{5}(-\frac{5}{6})^2 = -\frac{3}{5} \times \frac{25}{36} = -\frac{3 \times 5 \times 5}{5 \times 6 \times 2 \times 2} = \boxed{-\frac{5}{12}}$

7) Pour $x \in \mathbb{R}$, $f(x) = \frac{2x}{5} - x^2$

Calculer $f(-3)$ et $f(\frac{7}{5})$

• $f(-3) = \frac{2 \times (-3)}{5} - (-3)^2 = -\frac{6}{5} - 9 = -\frac{6}{5} - \frac{45}{5} = \boxed{-\frac{51}{5}}$

• $f(\frac{7}{5}) = \frac{2 \times \frac{7}{5}}{5} - (\frac{7}{5})^2 = \frac{\frac{14}{5}}{5} - \frac{49}{25}$
 $= \frac{14}{5} \times \frac{1}{5} - \frac{49}{25} = \frac{14}{25} - \frac{49}{25} = \frac{-35}{25} = \boxed{-\frac{7}{5}}$

8) Pour $x \in \mathbb{R}$, $f(x) = -\frac{x^2}{3} - 4x$

Calculer $f(-1)$ et $f(\frac{3}{5})$

• $f(-1) = -\frac{(-1)^2}{3} - 4 \times (-1) = -\frac{1}{3} + 4 = -\frac{1}{3} + \frac{12}{3} = \boxed{\frac{11}{3}}$

• $f(\frac{3}{5}) = -\frac{(\frac{3}{5})^2}{3} - 4 \times \frac{3}{5} = -\frac{\frac{9}{25}}{3} - \frac{12}{5}$
 $= -\frac{9}{25} \times \frac{1}{3} - \frac{12}{5}$
 $= -\frac{3 \times 3}{25 \times 3} - \frac{12}{5} = -\frac{3}{25} - \frac{60}{25} = \boxed{-\frac{63}{25}}$

9 Pour $x \in \mathbb{R}$, $f(x) = -\frac{7}{3}x - x^2$

Calculer $f(-3)$ et $f\left(\frac{5}{2}\right)$

$$\begin{aligned} \bullet f(-3) &= -\frac{7}{3} \times (-3) - (-3)^2 \\ &= 7 - 9 = \boxed{-2} \end{aligned}$$

$$\begin{aligned} \bullet f\left(\frac{5}{2}\right) &= -\frac{7}{3} \times \frac{5}{2} - \left(\frac{5}{2}\right)^2 \\ &= -\frac{35}{6} - \frac{25}{4} \\ &= -\frac{70}{12} - \frac{75}{12} \\ &= \boxed{-\frac{145}{12}} \end{aligned}$$