Problem 17

If $\mathrm{D}_f = \ (-3, 2] \cup (3, 5)$;

What is the domain of $-2f\left(1 - \frac{x}{2}\right) + 3$?

Answer

$\boxed{(-8,-4)\cup[-2,8)}$

Explanation

First of all, the transformations on the outside of the function will not affect the domain. Thus:

$$\mathrm{D}_{-2f\left(1-\frac{x}{2}\right)+3} = \mathrm{D}_{f\left(-\frac{1}{2}x+1\right)}$$

$$\mathrm{D}_{f(x+1)} = (-4,1]\cup(2,4)$$

$$\mathrm{D}_{f(-x+1)} = (-4,-2)\cup[-1,4)$$

$$\mathrm{D}_{f\left(-\frac{1}{2}x+1\right)} = (-8,-4)\cup[-2,8)$$