

7.2-13 Perform the indicated operation and simplify.

$$\textcircled{A} \rightarrow \frac{m^2-9}{m^2+3m-18} \cdot \frac{m-3}{18+3m-m^2} \quad \textcircled{C}$$

- ☐ A. $-\frac{m-3}{m^2}$
- ☐ B. $\frac{m-3}{m^2-36}$
- ☐ C. $\frac{m+3}{m^2-36}$
- ☒ D. $-\frac{m-3}{m^2-36}$

Factor all parts completely

$$\textcircled{A} \quad m^2-9 = (m-3)(m+3)$$

$$\textcircled{B} \quad m^2+3m-18 = (m+6)(m-3)$$

$$\begin{array}{r} -18 \\ 6 \times -3 \\ 3 \end{array}$$

$$\textcircled{C} \quad (m-3) \text{ already factored}$$

$$\textcircled{D} \quad 18+3m-m^2$$

write in standard form:

$$-m^2+3m+18$$

factor out -1

$$-1(m^2-3m-18)$$

$$-(m-6)(m+3)$$

$$\begin{array}{r} -18 \\ -6 \times +3 \\ -3 \end{array}$$

This is where the negative comes from.

Cancel common factors

$$\frac{(m-3)(m+3) \cdot (m-3)}{(m+6)(m-3)(-1)(m-6)(m+3)}$$

$$= \boxed{-\frac{(m-3)}{(m+6)(m-6)}} \quad \leftarrow \text{best answer}$$

equivalent to

$$= \boxed{-\frac{(m-3)}{(m^2-36)}}$$

If you don't write in standard form, you get $(3+m)(6-m)$.

$6-m$ is NOT equivalent to $m-6$.