

1 Find the greatest common factor of 12 and 45.

Since $12 = 2 \cdot 2 \cdot 3$ and $45 = 3 \cdot 3 \cdot 5$, their greatest common factor is 3.

2 Factor the following polynomials:

a $5z^2 + 30z$

Since $5z^2 = 5z \cdot z$ and $30z = 5z \cdot 6$,

$$5z^2 + 30z = 5z(z + 6).$$

b $-6a^3 + 12a^2 - 3a$

Since $-6a^3 = -3a \cdot 2a^2$, $12a^2 = -3a \cdot -4a$, and $-3a = -3a \cdot 1$,

$$-6a^3 + 12a^2 - 3a = -3a(2a^2 - 4a + 1).$$