Topic: Equations with parentheses

Question: Solve for the variable.

$$-(6x-5)=4(7x-8)+3$$

Answer choices:

A $x=5$

B $x=3$

C $x=-1$

D $x=1$

Solution: D

First, we'll use the distributive property to distribute the coefficients in front of the parentheses.

$$-(6x - 5) = 4(7x - 8) + 3$$

$$-6x + 5 = 28x - 32 + 3$$

Now we'll collect like terms and then use inverse operations to solve for x.

$$-6x + 5 = 28x - 29$$

$$-6x + 6x + 5 = 28x + 6x - 29$$

$$5 = 34x - 29$$

$$5 + 29 = 34x - 29 + 29$$

$$34 = 34x$$

$$\frac{34}{34} = \frac{34x}{34}$$

$$1 = x$$

Topic: Equations with parentheses

Question: Solve for n.

$$-6^0(n^0 - 4) - 2(n - 4) = -3(n + 2^0)$$

Answer choices:

A $n = -14$

B $n = 14$

C $n = 10$

D $n = -10$

Solution: A

First, we have 6, n, and 2 raised to the 0th power. Since any nonzero quantity raised to the 0th power is equal to 1, we know that $6^0 = 1$ and $2^0 = 1$. We don't yet know if n is nonzero, but we'll proceed as though it is.

$$-6^0(n^0 - 4) - 2(n - 4) = -3(n + 2^0)$$

$$-1(1 - 4) - 2(n - 4) = -3(n + 1)$$

$$-1(-3) - 2(n - 4) = -3(n + 1)$$

$$3 - 2(n - 4) = -3(n + 1)$$

Next, we'll use the distributive property to distribute the coefficients in front of the parentheses.

$$3 - 2n + 8 = -3n - 3$$

Now we'll collect like terms and then use inverse operations to solve for n.

$$11 - 2n = -3n - 3$$

$$11 - 2n + 3n = -3n + 3n - 3$$

$$11 + n = -3$$

$$11 - 11 + n = -3 - 11$$

$$n = -14$$

Topic: Equations with parentheses

Question: Solve this equation for m.

$$4m - 2(3m + 2) + 4 = 3(4 - 2m) + 3m$$

Answer choices:

A 1

B 4

C 12

D 20

Solution: C

If we start with

$$4m - 2(3m + 2) + 4 = 3(4 - 2m) + 3m$$

then we'll first use the distributive property to get

$$4m - 6m - 4 + 4 = 12 - 6m + 3m$$

Collect like terms.

$$-2m = 12 - 3m$$

Add $3m$ to both sides.

$$m = 12$$