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Months	How much \$ was added since that month
12	500
11	$500(1.01)^1$
10	$500(1.01)^2$
⋮	⋮
1	$500(1.01)^{11}$

$$a = \$500$$

$$r = 1 + 0.01 = 1.01$$

$$n = 12 \text{ months}$$

$$S_{12} = \frac{500(1.01^{12} - 1)}{1.01 - 1}$$

$$S_{12} = \$6341.25$$

$$S_{12} = 500 + 500(1.01)^1 + \dots + 500(1.01)^{11}$$

$$S_{12} = 500(1 + 1.01^1 + \dots + 1.01^{11})$$

You planted a new rose bush in dry soil on a Saturday and you will water it with 2 gallons of water every Saturday. The soil loses 60% of the water every week. How many gallons of water is in the soil after 10 weeks?

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Weeks	How many gallons are left since that week
10	2
9	$2(0.4)^1$
8	$2(0.4)^2$
⋮	⋮
1	$2(0.4)^9$

$$a = 2 \text{ gallons}$$

$$n = 10 \text{ weeks}$$

$$r = 1 - 0.6 = 0.4$$

$$S_{10} = \frac{2((0.4)^{10} - 1)}{0.4 - 1} = \boxed{3.3 \text{ gallons}}$$

$$S_{10} = 2 + 2(0.4)^1 + 2(0.4)^2 + \dots + 2(0.4)^9$$

$$S_{10} = 2(1 + (0.4)^1 + (0.4)^2 + \dots + (0.4)^9)$$