Solution:

(1)

(a) $Amount = \$\frac{20{,}000}{(1.05)^5} = \$15{,}670.52$

(b) $Amount = \frac{\$\ 20{,}000}{(1.1)^5} = \$12{,}418.42$

© $Amount = \$\frac{20{,}000}{(1.2)^5} = \$8{,}037.55$

(2)

(a)

$$Amount\ to\ be\ invested$$
$$= \frac{5000}{1+0.05} + \frac{5000}{(1+0.05)^2} + \frac{5000}{(1+0.05)^3} + \frac{5000}{(1+0.05)^4} + \frac{5000}{(1+0.05)^5}$$
$$= \frac{5000}{0.05}\left(1 - \frac{1}{(1+0.05)^5}\right) = \$21{,}647.38$$

(b)

$$Amount\ to\ be\ invested = \frac{5000}{0.1}\left(1 - \frac{1}{1.1^5}\right) = \$18{,}953.93$$

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$$Amount\ to\ be\ invested = \frac{5000}{0.2}\left(1 - \frac{1}{1.2^5}\right) = \$14{,}953.06$$