**35.23 A piece of equipment is purchased for $20K and will be sold 5 years later for $5K. The first year maintenance costs $2500, then increases by $500 per year. The effective interest rate is 8%. What is the present worth?**

A. $-\$30K$

B. $-\$23K$

C. $-\$10K$

D. $-\$3K$

Draw a cash flow diagram or make a list of cash flows.

In Year 0, there is an initial payment of $20K (negative).

In Years 1-5, there is an annual maintance cost of $2500 (negative) which escalates by an additional $500 per year. This can be treated a uniform series of payments *plus* a uniform gradient.

In Year 5, there is a $5K future cash payment (positive) for the salvage value.

Write an expression for the present value. Use the $i = 8\%$ Factor Table to retreive the cash flow factors.

$$PV = -\$20,000 - \$2500\,(P/A, 8\%, 5) - \$500\,(P/G, 8\%, 5) + \$5000\,(P/F, 8\%, 5)$$

$$PV = -\$20,000 - \$2500\,(3.9927) - \$500\,(7.3724) + \$5000\,(0.6806) = -\$30,264$$

**Answer A**