

1981 continued

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$$\textcircled{1} \Rightarrow w^2 = 20S_1$$

$$\begin{aligned} \textcircled{2} \Rightarrow & 0 = w^3 - 4(696 - S_1) \\ & -80 = w^3 - 2784 + 4S_1 \\ & \Rightarrow \frac{w^3 + 2784}{4} = S_1 \end{aligned}$$

$$\therefore \Rightarrow w^3 - 2784 + 4 \cdot \frac{w^3}{2(1.02)}$$

$$\Rightarrow w^3 + \frac{w^3}{0.6} = +2784.$$

$$\Rightarrow w^3 + \frac{5}{3}w^3 = 2784$$

$$\Rightarrow \frac{8w^3}{3} = 2784$$

$$\Rightarrow w^3 = \left( \frac{2784 \times 3}{8} \right)$$

$$= 348 \times 3$$

$$= 1044 = 6\sqrt{29}$$

$$w = \sqrt{1044} = 32.3$$

$$\therefore t_1 = \frac{32.3}{1.02} = \frac{6\sqrt{29}}{1.02} = \frac{6\sqrt{29}}{1.02} = \frac{32.3}{1.02} = 31.67$$

$$t_1 = 26.93$$

$$t_2 = 16.13$$

$$\begin{aligned} \tau &= 5\sqrt{29} + 3\sqrt{29} \\ &= 8\sqrt{29} \end{aligned}$$