> $eq1 := s \cdot (s+1) \cdot (s+3) \cdot (s+4) + 20 \cdot s$

$$eq1 := s\,(s+1)\,(s+3)\,(s+4) + 20\,s \tag{1}$$

> $simplify(eq1)$

$$s^4 + 8\,s^3 + 19\,s^2 + 32\,s \tag{2}$$

> $eq2 := s \cdot (s+1) \cdot (s+3) \cdot (s+4)$

$$eq2 := s\,(s+1)\,(s+3)\,(s+4) \tag{3}$$

> $simplify(expand(eq2))$

$$s^4 + 8\,s^3 + 19\,s^2 + 12\,s \tag{4}$$

> $simplify(expand(s \cdot (s+2) + 10 \cdot (s+4) \cdot (s+10)))$

$$11\,s^2 + 142\,s + 400 \tag{5}$$

> $simplify(expand(s \cdot (s+2) + 10 \cdot (s+4) \cdot (s+10) - 10(s+10)))$

$$11\,s^2 + 132\,s + 300 \tag{6}$$

> $simplify\left(expand\left(\frac{10 \cdot (s+10)}{11\,s^2 + 132 \cdot s + 300 + 10(s+10)}\right)\right)$

$$\frac{10\,s + 100}{11\,s^2 + 142\,s + 400} \tag{7}$$

> $ex := 1 + \frac{6}{s+4} + \frac{18}{s+4} + \frac{3}{s \cdot (s+4)} + \frac{3}{s+4}$

$$ex := 1 + \frac{27}{s+4} + \frac{3}{s\,(s+4)} \tag{8}$$

> $delt := simplify(expand(ex))$

$$delt := \frac{s^2 + 31\,s + 3}{s\,(s+4)} \tag{9}$$

> $simplify\left(expand\left(\frac{\frac{3}{s+4}}{delt} + \frac{\frac{3}{s \cdot (s+4)}}{delt}\right)\right)$

$$\frac{3\,s + 3}{s^2 + 31\,s + 3} \tag{10}$$

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