

6.1: 2, 3, 6, 9, 15, 17, 21, 22, 23, 26, 27, 29, 30

6.2: 1, 2, 3, 5, 9, 14, 16, 20, 21, 25, 26, 28, 31, 33

6.1:

2:

$$f(x) = \sqrt{x+2}, g(x) = \frac{1}{x+1}, 0 \leq x \leq 2$$

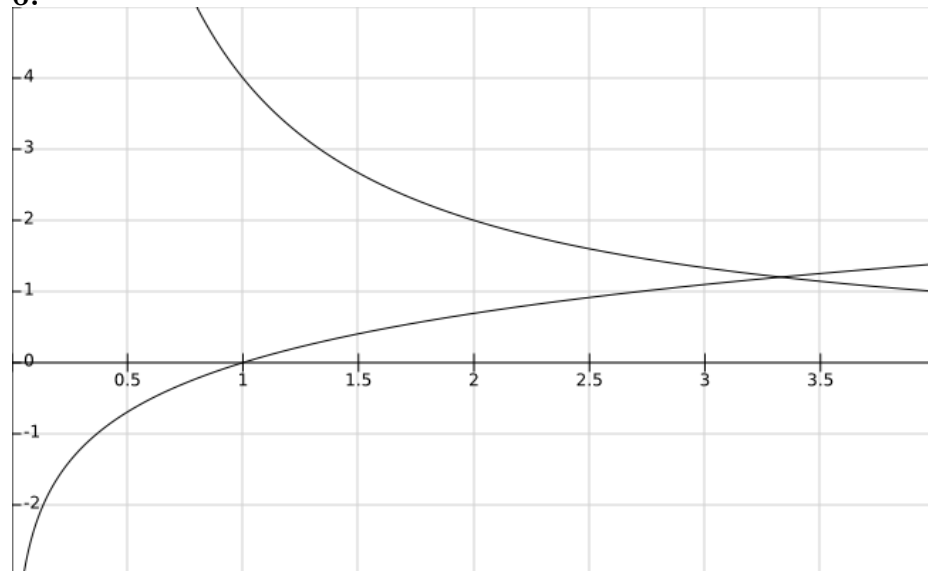
Area of top - area of bottom

$$\int_0^2 \sqrt{x+2} \, dx - \int_0^2 \frac{1}{x+1} \, dx$$

$$= -\frac{4}{3}(\sqrt{2} - 4) - \ln(3)$$

3:

6:



Area:

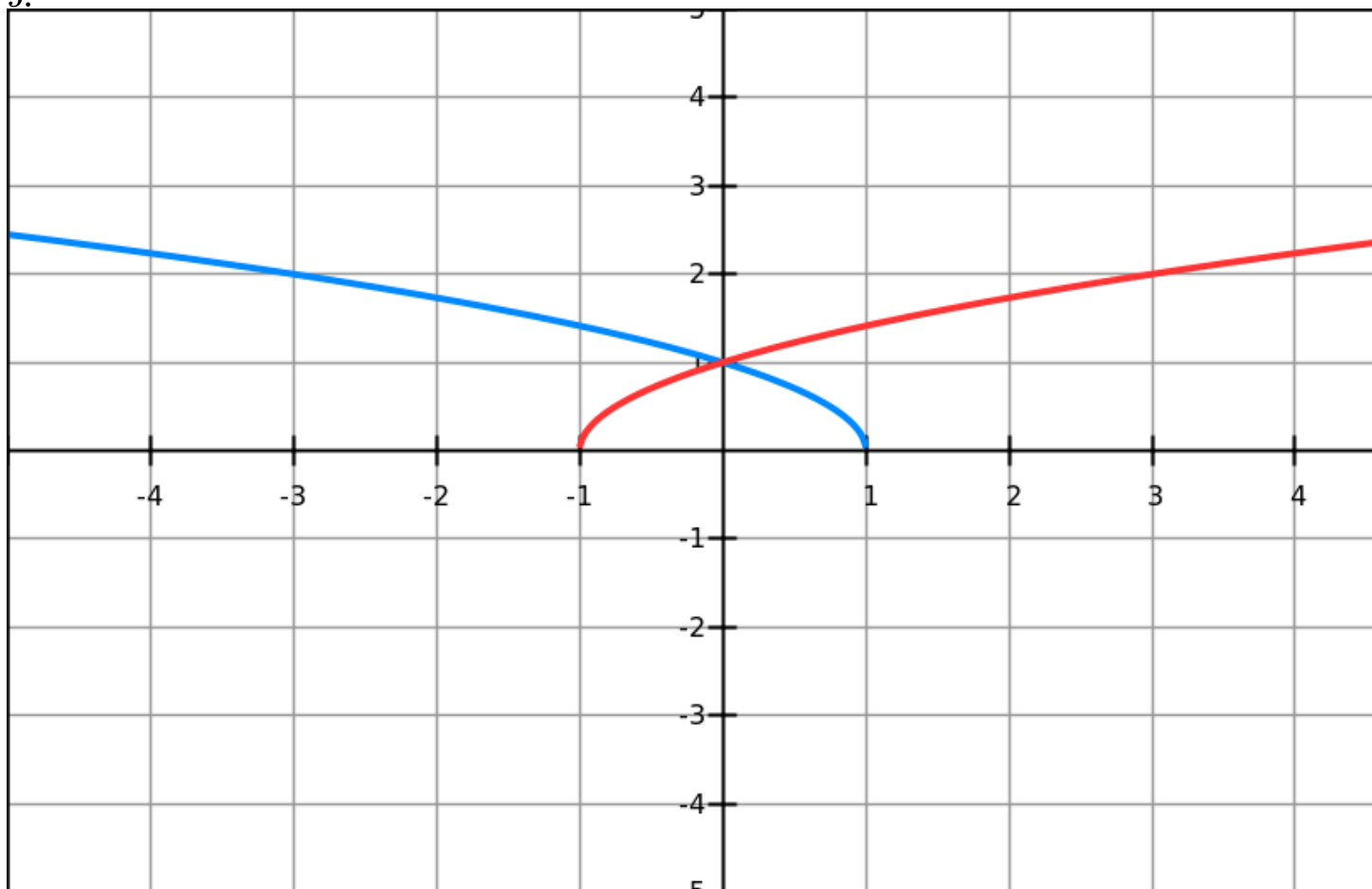
"Big": $\frac{4}{x}$

"Small": $\ln x$

$$= \int_1^3 \frac{4}{x} - \ln x \, dx$$

$$= \ln 3 + 2$$

9:



$$f(x) = \sqrt{-x+1}$$

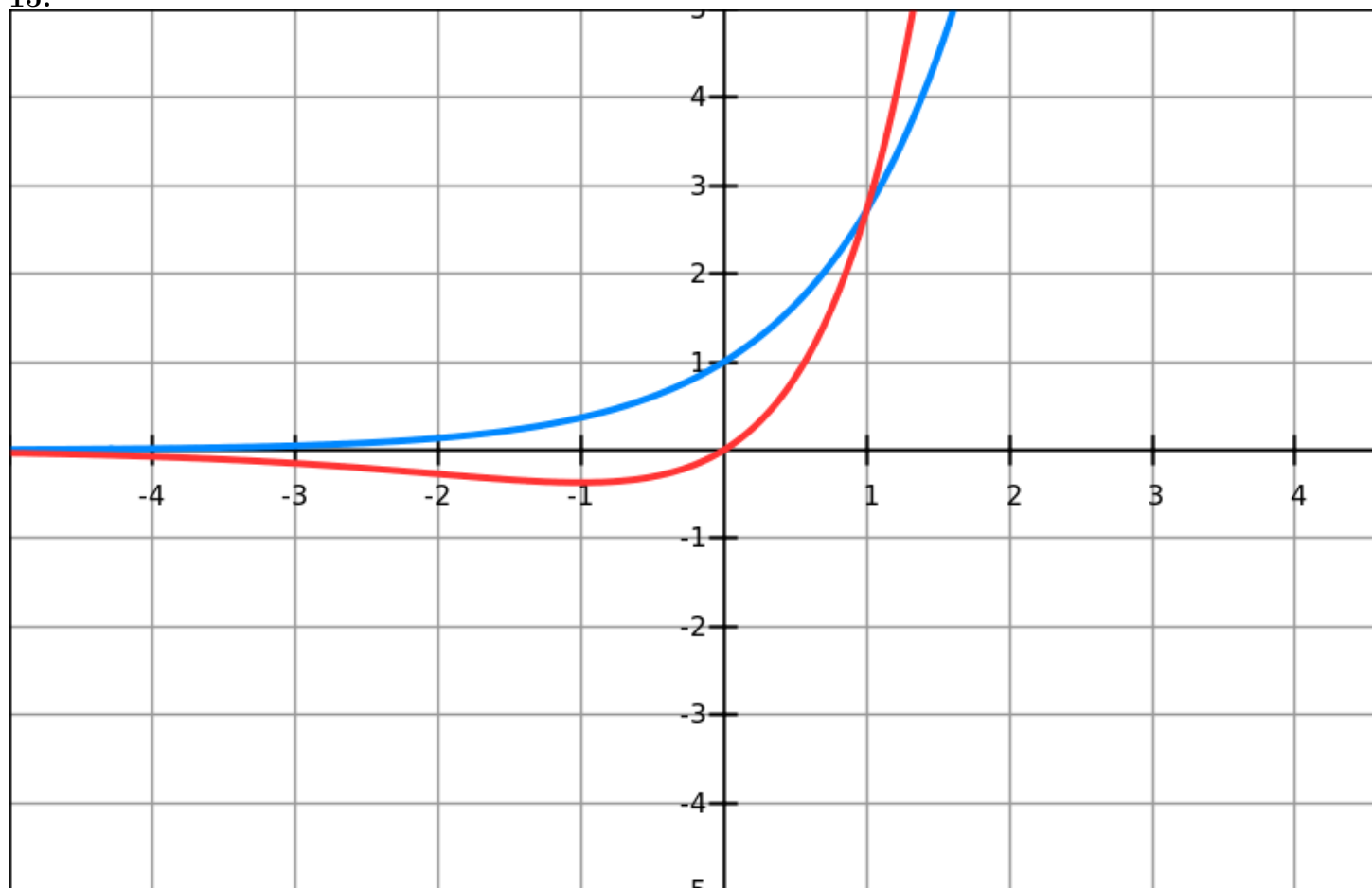
$$g(x) = \sqrt{x+1}$$

No upper function: $f(x)$ larger from $(-1, 0)$, $g(x)$ larger from $(0, 1)$

$$\int_{-1}^0 f(x) - g(x) \, dx + \int_0^1 g(x) - f(x) \, dx$$

$$\int_{-1}^0 \sqrt{-x+1} - \sqrt{x+1} \, dx + \int_0^1 \sqrt{x+1} - \sqrt{-x+1} \, dx$$

$$= \frac{8\sqrt{2}-8}{3}$$

15:

$$\int_0^1 e^x - xe^x dx$$

$$= 1$$

21:

$$\left[1, \frac{4}{3}\right]$$

$$\int_0^{1/3} \sqrt{x-1} - x^2 \ln x dx$$

$$\approx 0.05$$

22:

$$[0, 1]$$

$$\int_0^1 x \cdot \cos x - x^{10} dx$$

$$\approx 0.3$$

23:

$$\begin{aligned}
 f(x) &= \cos x \\
 g(x) &= \sin 2x \\
 \int_0^{1/2} \cos x - \sin 2x \, dx + \int_{1/2}^1 \sin 2x - \cos x \, dx \\
 &\approx 0.37
 \end{aligned}$$

26:**a:** Car A ; it has traveled a greater distance**b:** Distance between car A and B **c:** Can't tell. Car B is at a higher velocity, but that doesn't mean it's ahead.**d:** 2 minutes?**27:**

$$\begin{aligned}
 \Delta x &= 2 \\
 \frac{\Delta x}{3} \cdot [1 \cdot 0 + 4 \cdot 6.2 + 2 \cdot 7.2 + 4 \cdot 6.8 + 2 \cdot 5.6 + 4 \cdot 5.0 + 2 \cdot 4.8 + 4 \cdot 4.8 + 1 \cdot 0] &= \frac{2}{3} \cdot 126.4 \\
 &\approx 84.27
 \end{aligned}$$

29: ≈ 8868 . Equals the amount of population growth over 10 years.**30:**

The shaded region is total profit