(b) Accumulated amount of money $= e^{rt} \cdot$ Present value

$$= e^{0.04 \cdot 15} \cdot 19437$$

$$= e^{0.6} \cdot 19437$$

$$= \$35,414$$

<u>8</u> Area $= \displaystyle\int_2^{\infty} \frac{5}{2x^2}\,dx$

$$= \lim_{b\to\infty} \int_2^{b} \frac{5}{2x^2}\,dx$$

$$= \frac{5}{2}\lim_{b\to\infty} \int_2^{b} x^{-2}\,dx$$

$$= \frac{5}{2}\lim_{b\to\infty} -\frac{1}{x}\Big|_2^{b}$$

$$= \frac{5}{2}\lim_{b\to\infty}\left[-\frac{1}{b}+\frac{1}{2}\right] \qquad \text{As } b\to\infty \; -\frac{1}{b}\to 0$$

$$= \frac{5}{2}\cdot\frac{1}{2} = \boxed{\frac{5}{4}}$$

<u>9</u> $\displaystyle\int_{-\infty}^{-5} \frac{4}{x^4}\,dx = \lim_{b\to-\infty}\int_b^{-5}\frac{4}{x^4}\,dx$

$$= 4\lim_{b\to-\infty}\int_b^{-5}\frac{1}{x^4}\,dx$$

$$= 4\lim_{b\to-\infty}\frac{x^{-3}}{-3}\Big|_b^{-5}$$

$$= -\frac{4}{3}\lim_{b\to-\infty}\left[\frac{1}{(-5)^3}-\frac{1}{b^3}\right]$$

$$= -\frac{4}{3}\lim_{b\to-\infty}\left[-\frac{1}{125}-\frac{1}{b^3}\right] \qquad \text{As } b\to-\infty \; \frac{1}{b^3}\to 0$$

$$= -\frac{4}{3}\cdot\left(-\frac{1}{125}\right) = \frac{4}{375}$$