Answers to drill problems 5.

Problem 1.
$$\lim_{n \to \infty} x_n = 3.$$

Problem 2. If $|r| < 1$ then
$$\lim_{n \to \infty} x_n = \frac{1}{1-r};$$
otherwise (if $|r| \geq 1$) the sequence is divergent.

Problem 3.
$$\lim_{n \to \infty} x_n = e.$$

Problem 4.
$$\lim_{n \to \infty} x_n = e^3.$$

Problem 5.
$$\lim_{n \to \infty} x_n = e.$$

Problem 6.
$$\lim_{n \to \infty} x_n = e^3.$$

Problem 6. Hint: use $a^3 - b^3 = (a-b)(a^2 + ab + b^2)$.