

次の数列の極限を求めよ。

$$(1) n^2 - n$$

$$(2) \frac{5n^2 + 3n + 2}{4n^2 + 2n - 1}$$

$$(3) \frac{3n - 4}{n^2 + 1}$$

$$(4) \frac{4^{n+1}}{2^{n+1} + 3^n}$$

$$(5) \frac{3^{2n} - 6^{n+1}}{2^{2n} + 9^n}$$

$$(6) \sqrt{n^2 + 2n} - \sqrt{n^2 + n}$$

$$(7) \sqrt{n+1}(\sqrt{n+2} - \sqrt{n-1})$$

$$(8) \frac{1}{n} \cos \frac{n\pi}{4}$$