

$$1. g(x) = (x^2 + 2)/3$$

$$g'(x) = 2x/3$$

$$|g'(2)| = \frac{4}{3} > 1, \text{ it's divergent}$$

$$2. g(x) = \sqrt{3x - 2}$$

$$g'(x) = \frac{3}{2\sqrt{3x-2}}$$

$$|g'(2)| = \frac{3}{4} < 1, \text{ it's linear convergent}$$

$$3. g(x) = 3 - 2/x$$

$$g'(x) = \frac{2}{x^2}$$

$$|g'(2)| = \frac{1}{2} < 1, \text{ it's linear convergent}$$

$$4. g(x) = (x^2 - 2)/(2x - 3)$$

$$g'(x) = \frac{2(x-1)(x-2)}{(2x-3)^2}$$

$$|g'(2)| = 0 < 1, \text{ it's quadratic convergent}$$