Solve the following equations:

1. $2x^2 + x - 6 = 0$
2. $x(x+2) = 6$
3. $-\frac{2}{x^2} - \frac{6}{x^3} = 0$
4. $1 - \frac{3}{2x^2} = 0$
5. $1 - \frac{3}{2x^2} = \frac{5}{6}$
6. $x^3 = 4x$
7. $3x^3 = x^2 + 4x$
8. $2x^4 - 5x^2 - 12 = 0$
9. $\frac{4}{x} + \frac{10}{x^2} = 6$
10. $\frac{2}{x^{4/3}} = \frac{1}{2}$
11. $2^{x+1} = 5$
12. $\ln(2x+3) = 1$
13. $3\log_8(1-2x) - 2 = 0$

Answers:

① $x = -2, \ 3/2$

② $x = -1 \pm \sqrt{7}$

③ $x = -3$

④ $x = \pm\sqrt{\frac{3}{2}}$

⑤ $x = \pm 3$

⑥ $x = 0, \pm 2$

⑦ $x = -1, 0, 2$

⑧ $x = \pm 2$ are the only real solutions

⑨ $x = -1, \ 5/3$

⑩ $x = \pm 2\sqrt{2}$

⑪ $x = \frac{\log 5}{\log 2} - 1$

⑫ $x = \frac{e-3}{2}$

⑬ $x = -\frac{3}{2}$