Section 2: The quadratic formula

Section test

1. Find the discriminant of the quadratic equation $2x^2+5x-1=0$.

2. The quadratic equation in Question 1 has
(a) one real root
(b) two rational roots
(c) two real irrational roots
(d) no real roots

3. Which of the quadratic equations below do not have real roots? Choose as many as apply.
(i) $x^2+3x+1=0$
(ii) $2x^2-3x+4=0$
(iii) $3x^2+x-2=0$

4. The roots of the equation $x^2+2x-5=0$ are
(a) $-1\pm\sqrt{24}$
(b) $-1\pm\sqrt{6}$
(c) $-1\pm\sqrt{12}$
(d) There are no real roots

5. The roots of the equation $2x^2-11x+15=0$ are
(a) 2.5 and 3
(b) 1.5 and 5
(c) $\dfrac{11\pm\sqrt{241}}{4}$
(d) There are no real roots

6. The roots of the equation $3x^2-2x+4=0$ are
(a) 2 and $\frac{2}{3}$
(b) $\dfrac{1\pm\sqrt{11}}{3}$
(c) $\dfrac{1\pm\sqrt{13}}{3}$
(d) There are no real roots

7. The roots of the equation $2x^2-5x-4=0$ are
(a) $\dfrac{5\pm\sqrt{57}}{4}$
(b) $\dfrac{-5\pm\sqrt{57}}{4}$
(c) $\dfrac{5\pm\sqrt{7}}{4}$
(d) $\dfrac{-5\pm\sqrt{7}}{4}$

8. The quadratic equation $x^2+kx+2k-3=0$ has equal roots.
The possible value(s) of k are
(a) 2 or 6
(b) 2 only
(c) 3 or 4
(d) 0 only

9. How many real roots does the equation $x^4+6x^2+4=0$ have?

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10. An object is thrown vertically upwards so that its height *h* metres above the ground at time *t* seconds is given by $h = 20t - 5t^2 + 1$. After how many seconds does it hit the ground? Give your answer correct to 2 d.p.