Sixteenth Set of Homework for Math 05

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Please note: You should fully justify your answers.

1 Solving higher degree equations

1. Solve the following equations:
   (a) $5(3x-7)=0$
   (b) $3x(x-1)=0$
   (c) $(x-1)(x+3)(2x+5)=0$
   (d) $2x(3x-1)(x^2+1)=0$
   (e) $(x+7)^2(x-2)(x+1)=0$
2. Solve the following equations:
   (a) $x^2-7x=0$
   (b) $x^2-64=0$
   (c) $3x^3-75x=0$
   (d) $x^2-x-6=0$
   (e) $x^2-12x+35=0$
   (f) $x^2+16x+55=0$
   (g) $6x^2-5x+1=0$
   (h) $x^2-2x-80=0$
   (i) $10x^3-29x^2+10x=0$
   (j) $3x^2+12=0$
   (k) $2x^2+x-15=0$
   (l) $18x^2+29x+3=0$
   (m) $3x^3+3x^2-6x=0$
   (n) $x^4-81=0$
   (o) $x^4-5x^2+4=0$
   (p) $x^4+10x^2+9=0$
   (q) $x^3-27=0$
   (r) $x^5+x^4-2x^3-8x^2-8x+16=0$
3. Solve the following equations:
   (a) $x^2+4x+2=7$
   (b) $x^3=4x$
   (c) $x^2+8x+6=3x$
   (d) $2x(x+11)=13x+5$
4. Find a polynomial equation that satisfies the given conditions. Both sides of the equation should be in Simplified Expanded Form.
   (a) has solutions $x=1$, $x=0$ and $x=-5$.
   (b) its only real solutions are $x=3$, $x=\dfrac{3}{2}$ and has degree 3.
   (c) it has solutions $x=\dfrac{1}{2}$, $x=2$, $x=-\dfrac{2}{3}$ and integer coefficients.