1. Find three factorizations for the monomials.

a) $-8x^5$
ANS: 1)

(2)

(3)

b) $16y^6$
ANS: 1)

(2)

(3)

For problems 2 - 5, factor **completely**.

2. a) x^2+5x
ANS:

b) $3x^4-x^2$
ANS:

3. a) $5x^5+10x^2-8x$
ANS:

b) $8y^3-20y^2+12y-16$
ANS:

4. a) $\frac{5}{9}x^7+\frac{2}{9}x^5-\frac{4}{9}x^3-\frac{1}{9}x$
ANS:

b) $2.5x^6-0.5x^4+5x^3+10x^2$
ANS:

5. a) $3z^2(2z+1)+(2z+1)$
ANS:

b) $m^4(8-3m)-7(8-3m)$
ANS:

For problems 6 - 8, factor completely by **grouping**. Please show a **complete solution**.

6. a) $6z^3+3z^2+2z+1$
Solution:

b) $10x^3-25x^2+4x-10$
Solution:

7. a) $18x^3-21x^2+30x-35$
Solution:

b) $7x^3-14x^2-x+2$
Solution:

8. a) $2x^3+12x^2-5x-30$
Solution:

b) $20g^3-4g^2-25g+5$
Solution:

For problems 9 - 24, factor completely.

9. a) x^2+9x+8
ANS:

b) $y^2-11y+28$
ANS:

10. a) $z^2 - 8z + 7$
ANS:

b) $x^2 - \frac{2}{5}x + \frac{1}{25}$
ANS:

11. a) $t^2 - 12t + 35$
ANS:

b) $y^2 - 37 - 28$
ANS:

12. a) $x^2 - 72 + 6x$
ANS:

b) $b^4 + 5b^2 - 24$
ANS:

13. a) $x^4 - x^2 - 6$
ANS:

b) $a^2 + 19a + 88$
ANS:

14. a) $45 + 4x - x^2$
ANS:

b) $-z^2 + 36 - 9z$
ANS:

15 a) $x^4 - 20x^3 + 96x^2$
ANS:

b) $112 + 9y - y^2$
ANS:

16. a) $p^2 + 5pq - 24q^2$
ANS:

b) $7x^9 - 28x^8 - 35x^7$
ANS:

17. a) $x^2 - \frac{1}{4}x - \frac{1}{8}$
ANS:

b) $a^{2m} - 11a^m + 28$
ANS:

18. a) $3x^2 - x - 4$
ANS:

b) $7x^2 + 15x + 2$
ANS:

19. a) $2x^2 + 5x + 2$
ANS:

b) $35x^2 + 34x + 8$
ANS:

20. a) $6 - 13x + 6x^2$
ANS:

b) $15 + x - 2x^2$
ANS:

21. a) $18t^2 - 24t + 6$
ANS:

b) $6t^2 + 13t + 6$
ANS:

22. a) $-9 + 18x^2 - 21x$
ANS:

b) $-19x + 15x^2 + 6$
ANS:

23. a) $15x^3 + 19x^2 - 10x$
ANS:

b) $33t - 15 - 6t^2$
ANS:

24. a) $70x^4 + 68x^3 + 16x^2$
ANS:

b) $144x^5 + 168x^4 + 48x^3$
ANS:

25. a) A student presents the following work:

$$4x^2 + 28x + 48 = (2x + 6)(2x + 8)$$
$$= 2(x + 3)(x + 4)$$

Is it correct? Why?
ANS:

b) When searching for a factorization, why do we list pairs of numbers with the correct **product** instead of pairs of numbers with the correct **sum**?
ANS: