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Test corrections: Polynomial operations & graphs

Complete all of the problems for credit on test corrections.

1. Given $2x(5x^2 + 2x - 7) + 3 = 10x^3 + hx^2 + kx + 3$. Find h and k.

2. Given the function $f(x) = (x + 2)(x^2 + 6x - 7)$
   (a) Express f in fully factored form.

   (b) What are the roots of the function?

3. Simplify $3i(-5 + 2i)$. Express the result in the form $a + bi$ where $a, b \epsilon R$.

4. Simplify the expression $2ai(10 - 3i)$.Express the result in the form $a + bi$ where $a, b \epsilon R$.

5. Using the quadratic formula or otherwise, solve $2x^2 - x - 6 = 0$.

6. If $(x - 2)$ is a factor of $f(x) = (x - 2)(5x^2 + 13x + 27)$, then what is the value of $f(2)$?

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7. When $g(x)$ is divided by $x+5$, the remainder is 0. Given $g(x) = x^4+6x^3+x^2-24x-20$. Write down the value of $g(-5)$.

8. Simplify the expression $\sqrt[3]{a^4} \cdot \sqrt[3]{x^5}$

9. Simplify the expression $\left(\frac{25x^5y^4}{4x}\right)^{\frac{1}{2}}$ to one with positive integer exponents and radicals.

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10. Given the function $f(x) = (x - 2)(x + 5)$.

    (a) State the x-intercepts of the graph of f.

    (b) Find the y-intercept of the graph of f.

11. What are the quotient and remainder when $x^3 + 5x^2 + 8x + 9$ is divided by $x + 2$?

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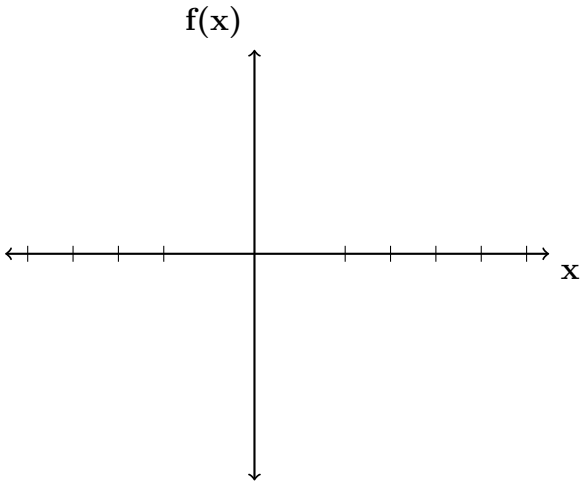
12. The graph of the function $f(x)$ is shown below. Which of the following could be $f(x)$?

(a) $f(x) = 2x^2 + 4x - 6$

(b) $f(x) = -2x^3 + 2x^2 + 18x - 9$

(c) $f(x) = (x - 3)(-x^3 + x^2 - 7x + 1)$

(d) $f(x) = x^3 - x^2 + 8x - 4$



13. Write the corresponding letter to the left of each numbered expression.

1)	A number plus 4 all multiplied by 11.	a)	w(10d + 10)
2)	A number divided by another number.	b)	11(b + 4)
3)	10 times a number added to 10 all multiplied by another number.	c)	11 - b
4)	A number squared then times by 9.	d)	$9m^2$
5)	11 minus a number.	e)	$\frac{r^2}{q^2}$
6)	A number minus 6.	f)	8(u + 8c)
7)	A number added to 8 times another number all times by 8.	g)	m - 6
8)	A square number divided by another square number.	h)	$\frac{f}{p}$

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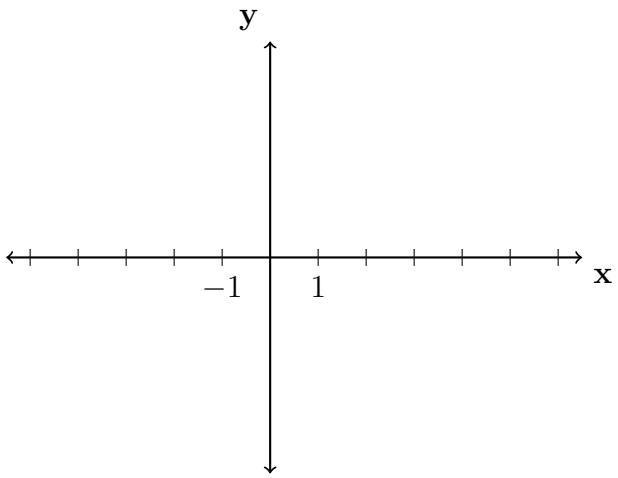
14. Given the polynomial function $h(x) = (x-3)(x+1)(x+5)$. Sketch $y = h(x)$ on the grid below, accurately depicting the x- and y-intercepts.



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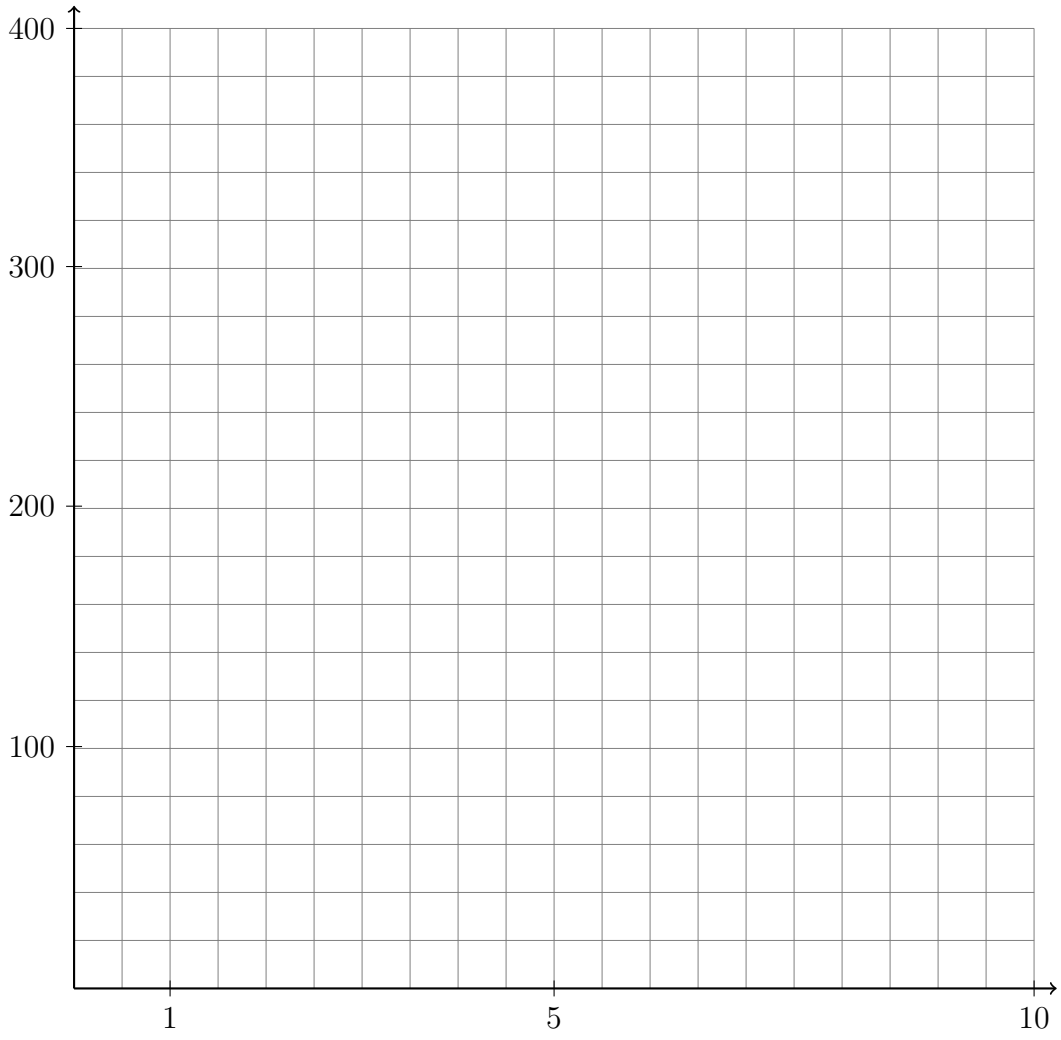
15. Graph $g(x) = 115(1.07)^{\frac{7x}{4}} - 45$ on the set of axes below.



Is the function an example of exponential growth or exponential decay? Justify your answer algebraically.

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16. Use long division to determine the quotient and remainder of $f(x) = (x^3 + 4x^2 - 8x - 6)$ divided by $g(x) = (x + 2)$. Express your answer as $q(x) + \dfrac{r(x)}{g(x)}$

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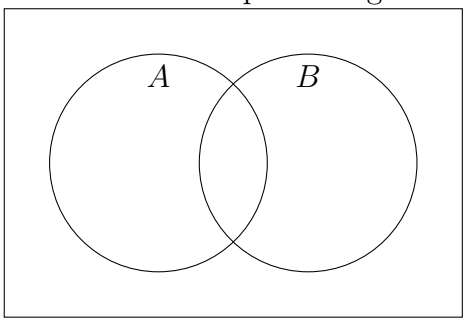
17. What is the quotient when $x^2 - 3x - 40$ is divided by $x + 5$?

18. Let A and B be independent events, where $\mathrm{P}(A) = 0.5$ and $\mathrm{P}(B) = 0.6$.

    (a) Find $\mathrm{P}(A \cap B)$

    (b) Find $\mathrm{P}(A \cup B)$

    (c) Shade the area representing $A \cap B'$ in Venn diagram below.



19. What are the quotient and remainder when $x^3 + 3x^2 - x + 2$ is divided by $x - 1$?

20. Given the function $f(x) = (x - 1)(x + 3)$. State the x-intercepts of the graph of f. Find the y-intercept of the graph of f.