PARTIAL FRACTIONS AND ITS INTEGRATION - WEEK 10

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1 Examples: Partial Fraction Decomposition

1. *(Example 1)* Write the partial fraction decomposition for $\dfrac{x+7}{x^2-x-6}$.

2. *(Example 2)* Write the partial fraction decomposition for $\dfrac{x+8}{x^2+7x+12}$.

3. *(Example 3)* Write the form of the partial fraction decomposition for $\dfrac{5x^2+20x+6}{x(x+1)^2}$.

4. *(Example 4)* Write the form of the partial fraction decomposition for $\dfrac{3x^2+7x+4}{x^3+4x^2+4x}$.

2 ClassWork: Partial Fraction Decomposition

Write the partial fraction decomposition for the following expressions:

5. $\dfrac{2(x+20)}{x^2-25}$

6. $\dfrac{3x+11}{x^2-2x-3}$

7. $\dfrac{8x+3}{x^2-3x}$

8. $\dfrac{10x+3}{x^2+x}$

9. $\dfrac{4x-13}{x^2-3x-10}$

10. $\dfrac{7x+5}{6(2x^2+3x+1)}$

11. $\dfrac{3x^2-2x-5}{x^3+x^2}$

12. $\dfrac{3x^2-x+1}{x(x+1)^2}$

13. $\dfrac{x+1}{3(x-2)^2}$

14. $\dfrac{3x-4}{(x-5)^2}$

15. $\dfrac{8x^2+15x+9}{(x+1)^3}$

16. $\dfrac{6x^2-5x}{(x+2)^3}$

3   ClassWork: Integration by Partial Fractions

Use partial fractions to find the indefinite integral:

17. $\displaystyle\int \dfrac{1}{x^2-1}\ \mathrm{d}x$

18. $\displaystyle\int \dfrac{4}{x^2-4}\ \mathrm{d}x$

19. $\displaystyle\int \dfrac{-2}{x^2-16}\ \mathrm{d}x$

20. $\displaystyle\int \dfrac{-4}{x^2-4}\ \mathrm{d}x$

21. $\displaystyle\int \dfrac{1}{2x^2-x}\ \mathrm{d}x$

22. $\displaystyle\int \dfrac{2}{x^2-2x}\ \mathrm{d}x$

23. $\displaystyle\int \dfrac{10}{x^2-10x}\ \mathrm{d}x$

24. $\displaystyle\int \dfrac{5}{x^2+x-6}\ \mathrm{d}x$

25. $\displaystyle\int \dfrac{3}{x^2+x-2}\ \mathrm{d}x$

26. $\displaystyle\int \dfrac{1}{4x^2-9}\ \mathrm{d}x$

27. $\displaystyle\int \dfrac{5-x}{2x^2+x-1}\ \mathrm{d}x$

28. $\displaystyle\int \dfrac{x+1}{x^2+4x+3}\ \mathrm{d}x$

29. $\displaystyle\int \dfrac{x^2-4x-4}{x^3-4x}\ \mathrm{d}x$

30. $\displaystyle\int \dfrac{x^2+12x+12}{x^3-4x}\ \mathrm{d}x$

31. $\displaystyle\int \frac{x+2}{x^2-4x} \, \mathrm{d}x$

32. $\displaystyle\int \frac{4x^2+2x-1}{x^3+x^2} \, \mathrm{d}x$

33. $\displaystyle\int \frac{2x-3}{(x-1)^2} \, \mathrm{d}x$

34. $\displaystyle\int \frac{x^4}{(x-1)^3} \, \mathrm{d}x$

35. $\displaystyle\int \frac{3x^2+3x+1}{x(x^2+2x+1)} \, \mathrm{d}x$

36. $\displaystyle\int \frac{3x}{x^2-6x+9} \, \mathrm{d}x$