

> **discrim(x^2+a*x+b,x);**

$$-4b + a^2$$

> **discrim(x^3+a*x^2+b*x+c,x);**

$$-27c^2 + 18cab + a^2b^2 - 4a^3c - 4b^3$$

> **discrim(x^4+a*x^2+b*x+c,x);**

$$-4a^3b^2 - 27b^4 + 16a^4c - 128a^2c^2 + 144acb^2 + 256c^3$$

> **discrim(x^5+a*x^4+b*x^3+c*x^2+d*x+e,x);**

$$\begin{aligned} & 18b^3ca^2ed - 80b^2c^2a^3de - 2050bce^2ad - 746bcea^2d^2 - 4b^2c^3a^2e + b^2c^2a^2d^2 + 18bc^3a^2d^2 \\ & - 80b^2ca^2d^3 - 630b^3ca^2e^2 - 630bc^3de + 18bc^3ad^2 - 72bc^4ae - 72b^4cde + 144b^2c^2d^3 \\ & + 144bc^2d^3 - 3750bce^3 + 825b^2c^2e^2 + 16b^3c^3e - 4b^3c^2d^2 - 6c^2a^2d^3 + 2000ca^2e^3 \\ & - 36ea^3d^3 - 1600ed^3c - 2500e^3ad - 50e^2a^2d^2 + 2000e^2d^2b + 2250ab^2e^3 + 2250dc^3 \\ & - 1600ba^3e^3 - 192ad^4c + 144a^2d^4b - 4b^3d^3a^2 - 27b^4a^2e^2 - 27a^4d^4 - 128d^4b^2 + 1 \\ & + 256a^5e^3 + 356b^2c^2ade + 3125e^4 + 144ca^4ed^2 + 24c^3a^2de + 1020a^2b^2e^2d + 160e^4 \\ & + 24ad^2b^3e - 192a^4dbe^2 \end{aligned}$$

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> for i from -3 to 10 do galois(x^4+i*x +12); sqrt(discrim(x^4+i*x +12,x)
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      3  $\sqrt{48909}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      36  $\sqrt{341}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      9  $\sqrt{5461}$ 
"4T3", {"D(4)"}, "-", 8, {"(1 3)", "(1 2 3 4)"}
      384  $\sqrt{3}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      9  $\sqrt{5461}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      36  $\sqrt{341}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      3  $\sqrt{48909}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      144  $\sqrt{21}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      9  $\sqrt{5253}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      12  $\sqrt{2829}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      9  $\sqrt{4661}$ 
"4T4", {"A(4)"}, "+", 12, {"(1 2 4)", "(2 3 4)"}
      576
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      3  $\sqrt{29469}$ 
"4T5", {"S(4)"}, "-", 24, {"(1 4)", "(2 4)", "(3 4)"}
      36  $\sqrt{133}$ 

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