

[SQUARE ROOTS BY NEWTON'S METHOD

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[Follow "Calclabs ..." pp. 69-70.

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[> Df:=D(f);

$$Df := x \rightarrow 2x$$

[> Newton:=x->evalf(x-f(x)/Df(x));

$$Newton := x \rightarrow \text{evalf}\left(x - \frac{f(x)}{Df(x)}\right)$$

[> f:=x->x^2-40; Df:=D(f);

$$f := x \rightarrow x^2 - 40$$

$$Df := x \rightarrow 2x$$

[> x0:=6;

$$x0 := 6$$

[> Newton(%);

6.333333333

[> Newton(%);

6.324561403

[> Newton(%);

6.324555320

[> Newton(%);

6.324555320

[> %^2;

40.00000000

[> f:=x->x^2-36.1;

$$f := x \rightarrow x^2 - 36.1$$

[>

[> Newton(x0);

6.008333333

[> Newton(%);

[>

6.008327554

[> Newton(%);

6.008327554

[> %^2;

36.10000000

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